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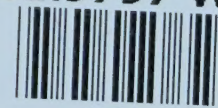
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PREFACE

IN this edition the work is completely revised, and as far as possible brought up to date. The most noteworthy new feature is the incorporation of all the parts into one general dictionary, and the omission of Part I of previous editions. When first written this had certain advantages, as being one of the few presentations in English of the elementary facts and theories of ecology. But this advantage has long disappeared, and it seemed to me that the space would be better employed in increasing the number of genera dealt with. On consulting Sir David Prain and other botanists, I found that they agreed with this idea. By a slight addition to the total number of pages I have found it possible to include all the genera, and hope that in this way the usefulness of the work to botanists in general may be greatly increased. I have of course attempted no criticism of those included, but have tried to indicate, as far as space would permit, the genera from which they have been segregated in many cases, or to which they are united by the other of the two chief recent editors of the vegetable kingdom (Bentham-Hooker, Engler-Prantl). It is obviously impossible to do very much in this direction. As it stands, the book is convenient for use, but a very slight addition to the facts given for each genus would add a line to the entry and, as there are roughly some 20,000 entries, this would add 400 pages to the book, and make it unwieldy. The same remark applies to the geographical distribution, which could not in general be given in great detail.

Before criticising, again, the inclusion of many obsolete technical terms and synonyms, it must be remembered that

some who use this book wish to use it in connection with floras now long published, and also that it is impossible to reset such a book all through for each edition, so that it is necessary to insert a little "padding" on practically every page.

Ecological, morphological, and other subjects have been dealt with by giving comparatively full accounts under selected genera. By referring, first to the subject, *e.g.* to Adventitious Buds, and then to the genera mentioned there, *e.g.* Begonia, Bryophyllum, &c., a fairly detailed account of each subject may be put together. In using the book, the subjects mentioned under a genus should always be looked up, to find other examples, *e.g.* under Aesculus look up Bud, Leaf, Leaf-mosaic, Cincinnus, Dichogamy, Change of Colour, &c.

A book like this must obviously be a compilation, and I have to express my warmest thanks to Prof. A. Engler for permission to draw upon the vast mass of material contained in *Die Natürlichen Pflanzenfamilien*. Owing to the war I have had no opportunity of asking him to renew this permission, and I trust that he will understand as much. When an article, as is frequently the case with the grouping of the sub-families within the family, is taken from the work mentioned, I have acknowledged the same by giving the name of the author. Otherwise I have in general drawn upon the book for the genera accepted by its authors, for the number of species (which has been brought roughly up to date by aid of the Supplements to the *Index Kewensis*), and for their geographical distribution.

The list of friends to whom I owe valuable suggestions, useful pieces of assistance, and the like, is very long, and I have no doubt that the following enumeration is incomplete and must ask the pardon of those who do not figure in it through some oversight on my part to note down their names at the moment the help was given. In the first place

I wish to thank Sir David Prain and the staff at Kew, more especially Drs Hill, Stapf, and Rolfe, and Mr S. A. Skan, whose detailed knowledge of the library has been of the very greatest assistance in easing my labour. The writing of this edition has occupied very much time during the last five years, and I am particularly grateful to Prof. Seward, who placed at my disposal a table large enough to enable me to spread out 20 works of reference at once, and to Dr Moss and others of the Cambridge staff. The first two of the five years were spent in Rio de Janeiro and I am much indebted for help to my colleagues there, particularly the late Dr Alberto Löfgren and Dr Achilles de Faria Lisbôa. I also owe many useful suggestions to my colleagues in other Botanic Gardens, *e.g.* Prof. O. Ames at Harvard, Prof. I. B. Balfour at Edinburgh, Prof. N. L. Britton at New York, Mr I. H. Burkill at Singapore, Prof. A. Engler at Berlin, Dr J. H. Maiden at Sydney, the late Dr H. H. W. Pearson at Cape Town, Dr Sargent at Jamaica Plain, and others. The late Dr E. A. N. Arber, and Mrs Arber, have laid me under very many obligations, and so have Sir Francis Darwin, Professors Bower, Farmer, Goebel, Goodale, Henry, Lang, Oliver, Scott, and Yapp, and Messrs Davie, Lock, Lynch, Riddle, Small, Smith, and many more. To my wife my obligations are unmeasured. Finally for the illustrations I have to thank Herr Engelmann for permission to copy some of the late Prof. Eichler's figures, and Dr Rendle for the use of some of those in his book on Classification.

J. C. WILLIS.

CAMBRIDGE,

April 4, 1919.

INDEX

TO THE IMPORTANT GENERAL ARTICLES, UNDER WHICH LISTS OF EXAMPLES (DESCRIBED AT GREATER LENGTH) WILL BE FOUND.

GENERAL

Abbreviations, Collecting, Concrescence, Description, Dimorphism, Literature, Nomenclature.

VEGETATIVE ORGANS

Adnate, Adventitious, Aerenchyma, Aerial Root, Branch, Bud, Bulb, Bulbil, Cauli(flory), Concrescence, Corm, Iso-(bilateral, &c.), Leaf, Phyllo-(taxy, &c.), Poly-(morphism), Rhizome, Stem, Stipule, Sym(podium), Thorn, Tuber, Vegetative Reproduction.

REPRODUCTIVE ORGANS

Aestivation, Aggregate fruit, Andro-(phore, &c.), Anemo-(philous), Aniso-(phyly), Apetalous, Apo-(gamy), Aril, Asymmetrical, Bee-flowers, Berry, Bract, Butterfly-flowers, Carrion-flowers, Cincinnus, Cleistogamy, Cyme, Dichasial cyme, Dichogamy, Dioecism, Dispersal, Endo-(sperm, &c.), Epi-(gynous, &c.), Floral, Flower, Fly-flowers, Fruit, Geo-(carpic), Gyno-(dioecism, &c.), Heter-(ostylism), Inflorescence, Loose-pollen mechanisms, Mixed inflorescence, Nectary, Nut, Ovary, Perianth, Pollination, Receptacle, Seed, Sex distribution, Stamen, Staminode, Zygo-(morphism).

CLASSIFICATION

Nomenclature; and *cf.* Key to Families at end of book.

FORMS OF VEGETATION; GEOGRAPHICAL DISTRIBUTION

Beach-jungle, Chaparral, Climbing Plants, Dispersal, Epiphytes, Floral regions, Halo-(phytes), Insectivorous Plants, Mangroves, Myrmecophilous Plants, Parasites, Pitcher Plants, Plant formations, Saprophytes, Water Plants, Xerophytes, Zones of Vegetation.

ECONOMIC BOTANY

Alcohol, Alkaloids, Arrowroot, Bamboo, Bark, Camphor, Cinnamon, Condiments, Cotton, Drugs, Dyes, Ebony, Economic Botany, Economic Products, Edible Products, Fibres, Fodder, Foliage Plants, Grass, Gum, Guttapercha, Lac, Latex, Mucilage, Oil, Ornamental Plants, Poison, Resins, Rubber, Sugar, Tan, Timber.

EXPLANATORY INTRODUCTION

The Index of English names, technical terms, &c., which formed Part III of former editions, is now incorporated with the list of genera, so that the work forms one dictionary from end to end, with the exception of the key to the families at the end of the book.

All the genera of Bentham-Hooker, Engler-Prantl, and Linnaeus are now included, as well as all given in the *Index Kewensis* and Supplements (except many synonyms), together with a large number published since the last Supplement, and which, by the kindness of the Director of Kew, I have been able to obtain from the MS lists kept at Kew. The most recent of these are given in a little Supplement at the end of the main dictionary, and I hope to bring this supplement up to date at intervals during the currency of the edition, adding the entries later to the body of the work so far as the padding will allow. Besides the genera, all families and higher divisions are also included.

The name of the genus is followed by the name of its author, often abbreviated, *e.g.* R.Br. (*cf.* Abbreviations), on the system explained under Nomenclature. The original description of the genus may be found by reference to the *Index Kewensis*. In the same way, the author is given after every species quoted, and the original description may be discovered from the same book.

Owing to the continual changes that go on in many families and genera, names are often reduced to synonyms; a great number of such are given in this book, chiefly those used in well-known floras; *e.g.* *Abildgaardia* Vahl = *Fimbristylis* Vahl. Under some of the best known genera, *e.g.* *Abies*, a few specific synonyms have also been given, especially names frequently met with in gardens, and opposite to each of these is given the name now generally used; thus *Abies alba* Michx. must be looked for under *Picea*, *Abies Douglasii* Lindl. under *Pseudotsuga*, and so on. It is very difficult to decide when divergence of two forms is sufficient to entitle them to rank as genera, and this difficulty is the cause of much synonymy. A genus *A* is established by one author, and then it is discovered not to differ sufficiently from another genus *B*, established by the same or another author, to remain as an independent genus. *A* is therefore merged in *B* and becomes a synonym. The

species of *A* retain as far as possible their old specific names when placed in *B*. When an entry such as "*Abildgaardia* Vahl = *Fimbristylis* Vahl p.p." is found, it means that the genus *Abildgaardia* as established by Vahl is merged in his *Fimbristylis*. Many of the species change their names, but some retain their specific names, when the name is not already occupied. This latter case is often indicated by putting the name of the old genus in brackets after that of the new, thus, *F. (A.) fulvescens*. In many cases the names of some of the genera thus merged in other genera are indicated thus: *Axinandra* Thw. (*BH.* incl. *Naxiandra* Krasser); no attempt however has been made to give all such cases or a fraction of them, but only a few of the more important. In particular those have been given where the genus as here defined differs from the definition in Engler and Prantl's *Natürliche Pflanzenfamilien* or Bentham and Hooker's *Genera Plantarum* by the inclusion and exclusion of other genera.

The name of the genus is followed by that of the family to which it belongs, and after this is often a number (in brackets) indicating the section of the family, thus *Acacia* belongs to Subfamily 1 and Tribe 2 of Leguminosae. The general plan upon which the book has been constructed, and the necessity for condensation, render it essential, if the full advantage is to be derived from its use, that the student should refer to the family as well as the genus. There he will find the important general characters possessed by its members, and should examine the genus to see in what it agrees, and in what it disagrees, with these. A further reference to the classification given at the end of the article upon the family will point out the special characters to be looked for in the genus as a member of some particular sub-family or tribe. In this way a large amount of information about the particular plant in question may be obtained, and at the same time the student will get into the way of regarding plants not as so many independent and disconnected units, but as related members of one great whole. In this way too he will soon acquire an appreciation of the relative importance of the different characters in classification and will learn to recognise the approximate relationships of most plants after a brief inspection, or even at sight.

The families are those given by Engler in his *Syllabus* and in *Die natürlichen Pflanzenfamilien*, but sufficient reference is made to Bentham and Hooker's system of classification to enable any one who may prefer to use that system to do so.

The name of the family is followed by a statement of the number of

species in the genus, and its geographical distribution. The number, unless very small, is always only an approximation; new research is always bringing new species to light, splitting up older ones, or combining two or more into one. This is all the information that is given about a very large number of the genera; only when a genus presents some character of interest which is not common to the order or group, is any particular mention made of it. The biological peculiarities of the most important genera are dealt with pretty fully, but much has been omitted. Thus in dealing with the pollination-methods of flowers a selection of important genera, illustrating the various methods, has been made for description; so too with epiphytes, xerophytes, the morphology of parts, and so on. General discussions of all these subjects will be found under the title of the subject itself, and numerous examples are there quoted; these examples are mostly dealt with more fully. Numerous cross-references to other articles, *e.g.* Buds, Dichogamy, Fruit, Leaf, Parasite, Xerophyte, &c. (*cf.* Index), are made, and should be looked up.

While in the morphology, &c. a selection has thus been made of genera for treatment, this is less the case with economic botany. This has been more fully treated, only a comparatively few genera being omitted. Space, however, has not permitted of a detailed description of economic products or the way in which they are obtained; for this reference must be made to other works (see Literature).

Turning now to the other articles upon the families, the same general principles apply to them. After the name of the family is given the order to which it belongs, marked *EP.* or *BH.* if necessary to distinguish between these systematists. This should be looked up in the key at the end; this will show the families which are most nearly related to the one under consideration, and the characters that distinguish one from the other can be made out by comparison of their descriptions. The student should always endeavour to make out why a given family is classified in the position assigned to it. When the family as defined by Engler differs from that defined by Bentham and Hooker, as is so often the case, an attempt should be made to discover the reasons for the difference.

After the position of the family in the system follows the number of its genera and species, the morphology and natural history of its vegetative and reproductive organs, its economic products, and finally, in the case of the more important families, its classification into sub-families and tribes, with the more important genera belonging to each. The student should work through this part and study as many of the genera

as possible before leaving the family. This is easily managed in dealing with the outdoor collection in our botanic gardens.

No particular attempt is made in the book to avoid technical terms. When a term or abbreviation is used that the reader does not understand he should look it up in the Dictionary, or under Abbreviations.

To save space, in many cases in which there are several words in use beginning with the same prefix, *e.g.* aniso-, apo-, endo-, epi-, geo-, gyno-, halo-, heter-, iso-, phyllo-, poly-, sym-, xero-, &c., all are given under the heading of the prefix. If a word is looked up as a whole, there fore, and not found, reference should be made to the prefix before saying that it is omitted from the Dictionary.

Many genera are described by different authors under different spellings, and the most common and important of such cases are included; thus *Prunella* is also described under *Brunella*, *Eleocharis* also under *Heleocharis*, &c.

A (fl.-class), fls. with freely exposed honey; *Acer*, *Euphorbia*, *Galium*, *Hedera*, *Ilex*, *Rhamnus*, *Saxifraga*, *Umbelliferae*.

A-, An- (Gr. prefix), not.

Aaron's Beard, *Hypericum calycinum* L.

AB (fl.-class), fls. with partially concealed honey; *Caltha*, *Crataegus*, *Cruciferae*, *Fragaria*, *Potentilla*, *Ranunculus*, *Sedum*.

Ab- (Lat. prefix), from; **-axial** (side), away from axis; **-breviated**, shortened; **-errant**, differing from type; **-normal**, varying from the rule; **-original**, strictly native; **-ortion**, imperfect or arrested development; **-rupt**, terminating suddenly; **-sciss-layer**, separation-layer for dropping the l.; **-sorption**, taking up of fluids by r. or l.

Abaca, Manila hemp, *Musa textilis* Née.

Abasoloa La Llave. Compositae (5). 1 Mex.

Abatia Ruiz et Pav. Flacourtiaceae (7) (Samydaceae, *BH.*). 5 trop. S. Am. Fl. apet. L. opp.

Abauria Becc. (*Koompassia* Maingay, *EP.*). Legum. (11. 5). 2 Malaya.

Abbevillea Berg. = *Campomanesia* Ruiz et Pav. p.p. (Myrt.).

Abbottia F. Muell. Rubiaceae (11. 2). 1 N. Austr.

Abbreviations. Descriptions of floral morphology are largely given in the terms of Floral Formulae, explained under that heading. When the name of a genus or family is repeated in the article dealing with it, it is represented by the initial letter only, *e.g.* A. for *Abies*. The name of a family is sometimes abbreviated by the omission of the terminal *aceae*, &c.; *e.g.* Capparid., Compos. The term 'warm' is sometimes used instead of 'tropical and subtropical.' The expression *BH.* after a genus or family, &c., means "as defined by Bentham and Hooker in their *Genera Plantarum*"; *EP.* means "as defined by Engler and Prantl in the *Pflanzenfamilien* and *Pflanzenreich*."

The following mathematical and other symbols are largely used :

♂, hermaphrodite

♂, male

♀, female

() enclosing P, K, C, A, or G,
united or concrescent

$\overline{G}$ superior, $\overline{G}$ inferior, ovary

∞ , indefinite, numerous

$\times$, hybrid

§, section (of sp. or genus)

Ⓐ or ☉, annual

Ⓑ or ☉, biennial

Ⓓ, perennial

h, tree or shrub

>, more than

<, less than

$\pm$, more or less than

⊥, at right angles to

||, parallel to

=, equal to, merged in

!, seen by author

 μ , micromillimetre, $\frac{1}{1000}$ mm.

⊕, actinomorphic

⊙, zygomorphic

✱, N. hemisphere

✱, S. hemisphere

|✱, Old World

✱|, New World

The following abbreviations are largely employed in this and other botanical books:

A(ndroeceum)	Calif(ornia)	Epig(ynous)
Abyss(inia)	Campylotr(opous)	Epipet(alous)
Achlam(ydeous)	Cap(itate)	Epiph(yte)
Actinom(orphy)	Caps(ule)	Esp(ecially)
Acum(inate)	c.c., cubic centimetre	Ess(ential)
Adv(entitious)	Cel(eberrimus)	Eur(ope)
Afr(ica)	Centr(al) (alblatt)	Evap(oration)
Aggr(egate)	Char(acter)	Evergr(een)
Agr(icultural)	Chi(na)	Exalb(uminous)
Alb(umen)	Cl(arissimus)	Exc(ept)
Alt(ernate)	(ements*)	Excl(uding)
Am(eric)	Cleist(ogamic)	Exstip(ulate)
Amphitr(opous)	cm., centimetre	Extr(orse)
Anatr(opous)	Col(ony)	Extrafl(oral)
Anemoph(ilus)	Coll(ected by) (ection)	Fam(ily)
Ann(ual) (als, &c.)	Concr(escence)	Fert(ilisation)
Ant(arctic)	Consp(icious)	Fl(ower)(in)g
Apet(alous)	Conv(olute)	Fl(ore) pl(eno),
Apoc(ar)p(ous)	Cor(olla)	double-flowered
Arch(ipelago)	Cosmop(olitan)	Fol(ium, a leaf) (iage)
Archichl(amydeae)	Cot(yledon)	Fr(uit)
Arct(ic)	C(om)p(oun)d	Fri(gid)
Arg(entina)	C(ar)p(ell)	G(ynoeceum)
Art(icle)	Cult(ivated)	Gen(us)
As(ia)	Dehisc(ent)	Germin(ation)
Assim(ilation)	Dep(artment)	Ges(ellschaft)
Asymm(etrical)	Descr(ription)	Gland(ular)
Atl(antic)	Dich(asial)	Gr(eek)
Austr(alia)	Dichlam(ydeous)	H(erbarium)
Axill(ary)	Dichot(omous)	Hab(itat)
B(eatus), the late	Dicot(yledon)	Hem(isphere)
Beitr(äge)	Dim(inutive)	Herb(arium)
Ber(ichte)	Dioec(ious)	Heterochlam(ydeous)
Bot(any)	Diplost(emonous)	Heterost(yled)
Br(act)	Distr(ibution)	Himal(aya)
Braz(il)	Dorsiv(entral)	Hind(ustani)
Brit(ain)	Ed(ible) (ition)	Homochlam(ydeous)
Bull(etin)	Endosp(erm)	Horiz(ontal)
C(entral) (orolla)	Engl(and)	Hort(orum), of
Cal(yx) (edonia)	Entomoph(ilus)	gardens

* *Research Methods in Ecology.*

Hybr(id)	n(ovus), new	Repres(ented)
Hypog(ynous)	N(atural) O(rder)	Rev(iew)
I(sland)	Nat(ural) (uralised)	Rhiz(ome)
Ic(on), figure	Nat(ürlichen) Pfl(anz- enfamilien)	Rudim(entary)
Imbr(icate)		S(eu), or
Inc(ertae) sed(is), of unknown position	Nearct(ic)	Sandw(ich Is.)
Incl(uding)	Neotrop(ical)	Sci(ence)
Inconspic(uous)	Nom(en), a name	Sem(en), a seed
Ind(ia)	Nud(us), naked, without description	Sep(al)
Indeh(iscent)	N(ew) Z(ealand)	Septic(idal)
Indomal(aya)	Obdipl(ostemonous)	Septifr(agal)
Ined(itus), unpublished	Off(icinal)	Ser(ies)
Inf(erior)	Opp(osite)	Sicc(us), dry
Infl(orescence)	Orn(amental)	Soc(iety)
Interpet(iolar)	Orthotr(opous)	Sol(itary)
Intr(orse)	Ov(ule) (ary)	Sp(ecies)
Invol(ucre)	P(erianth)	Sta(men)
Irreg(ular)	Pac(ific)	St(amino)d(e)
Isobil(ateral)	Palaearct(ic)	Stip(ule)
Jap(an)	Palaeotrop(ical)	Subm(erged)
Jard(in)	Paras(ite)	Subtrop(ical)
K, calyx	Ped(icel) (uncle)	Succul(ent)
L(eaf)	Pen(insula)	Suff(ix)
Lat(in) (eral)	Pend(ulous)	Sup(erior)
Laticif(erous)	Perenn(ial)	Sympet(alous)
L(oco) c(itato), in the place quoted	Perf(ume)	Syn(onym)
Linn(ean)	Perig(ynous)	Sync(arpous)
Loc(ulus)	Pet(al)	T(abula), a figure
Loculic(idal)	Pfl(anzen) R(eich)	T(omus), a volume
m(etre)	Phil(ippines)	Tab(ula), a figure
Madag(ascar)	Pl(ant)	Tasm(ania)
Mag(azine)	Plac(enta)	Temp(erate)
Mal(aya)	Poll(icaris), inch	Term(inal)
Masc(arenes)	Pollin(ation)	Trans(actions)
Mech(anism)	Polyg(amous)	Transv(erse)
Medit(erranean)	Polyn(esia)	Trop(ical)
Membr(anous)	Post(erior)	Undershr(ub)
Met(amorphosed)	p(ro) p(arte), in part	Usu(ally)
Mex(ico)	Pref(ix)	Var(iety)
mm., millimetre	Prodr(omus)	Varieg(ated)
Moluc(cas)	Protandr(ous)	Veg(etation)
Monoch(asial)	Protog(ynous)	V(idi) S(iccum), dry specimen seen
Monochlam(ydeous)	P(oin)t	V(idi) V(ivum), living specimen seen
Monocot(yledon)	R(oot)	W(est) I(ndies)
Monoec(ious)	Rad(ix) (ical)	Wiss(enschaft)
Mus(eum)	Recept(acle)	Xero(phyte)
	Reg(ular)	Zygom(orphytic)
	Repr(oduction)	

Of course many of these abbreviations also signify the adjectival and

other forms of the word, *e.g.* albumen, albuminous, &c.; character, characterised, characteristic, &c.

The following abbreviations of authors' names are in common use in giving the authority for genera or species:

Achar(ius)	Bernh(ardi)	Chav(annes)	Ehrenb(erg)
Adans(on)	Bert(ero)	Chois(y)	Ehrh(art)
Afz(elius)	Berth(elo)	Cl(ements)	Eichl(er)
Ag(ardh)	Berthol(ini)	Clus(ius)	Ell(iott)
Ait(on)	Bertol(oni)	Cogn(iaux)	Endl(icher)‡
Alef(eld)	Bess(er)	Colebr(ooke)	Engelm(ann)
Allem(ao)	Bieb(erstein)	Col(enso)	Engl(er)§
All(ioni)	Bigel(ow)	Colm(eiro)	Eschsch(oltz)
Anders(on)	Binn(endijk)	Comm(elin)	Eschw(eiler)
Andr(ews)	Bisch(off)	Comm(erson)	Ettingsh(ausen)
Ant(oine)	Bl(ume)	Corn(uti)	Fabr(icius)
Arch(er)	Boeck(eler)	Coss(on)	Falc(oner)
Ard(uino)	Boerh(ave)	Cram(er)	Fing(erhuth)
Aresch(oug)	Boiss(ier)	Cunn(ingham)	Fisch(er)
Arn(ott)	Boj(er)	Curt(is)	Flac(ourt)
Aschers(on)	Bomm(er)	Dalz(ell)	Forsk(ål)
Aubl(et)	Bong(ard)	Dav(enport)	Forst(er)
Auct(orum)	Bonpl(and)	DC., A. P. de	Fourn(ier)
Bab(ington)	Borck(hausen)	Candolle (1778-1841)	Fourr(eau)
Bail(ey)	Br(aun, own)		Franch(et)
Baill(on)	Bref(eld)	Dec(ais)ne	Frem(ont)
Bak(er)	Brongn(iart)	Deless(ert)	Fres(enius)
Bal(ansa)	Brot(ero)	Del(ile)	Fr(ies)
Balb(is)	Brunf(els)	Dennst(aedt)	Gaertn(er)
Balf(our)	Buch(anan)-	De Not(aris)	Gal(eotti)
Barb(osa)	Ham(ilton)	Desf(ontaines)	Gardn(er)
Rodr(igues)	Burch(ell)	Desr(ousseaux)	Gasp(ari)
Barnad(es)	Bur(eau)	Desv(aux)	Gaudich(aud)
Barn(eoud)	Burm(ann)	Dicks(on)	Gaud(in)
Barr(elier)	Buxb(aum)	Didrichs(en)	Gies(enhagen)
Bartl(ing)	Camb(essedes)	Dietr(ich)	Gilb(ert)
Batem(an)	Carr(iere)	Dill(enius)	Gilib(ert)
Bauh(in)*	Carr(uthers)	Dillw(yn)	Gill(ies)
Baumg(arten)	Casp(ary)	Dodon(aeus)	Gis(eke)
Beauv(ois)	Cass(ini)	Dougl(as)	Gled(itsch)
Becc(ari)	Cast(agne)	Drumm(ond)	Gmel(in)
Bedd(ome)	Cav(anilles)	Dryand(er)	Godr(on)
Benj(amin)	C. DC., Casimir	Duch(artre)	Goldm(ann)
Benn(ett)	de Candolle	Dumort(ier)	Grah(am)
Benth(am)	Cerv(antes)	Dun(al)	Gren(ier)
B(entham and)	Cham(isso)	Eat(on)	Grev(ille)
H(ooker)†	Champ(ion)	Eckl(on)	Griff(ith)
Berg(ius)	Chapm(an)	Edgew(orth)	Griseb(ach)

* *Prodromus Theatri Botanici*, 1620.

† *Ibid.* 1836-40.

§ *Natürlichen Pflanzenfamilien*, 1889-97; *Das Pflanzenreich*, 1900-(in progress).

† *Genera Plantarum*, 1862-83.

Gronov(ius)	Juss(ieu)	Ludw(ig)	Parm(entier)
Guett(ard)	1748-1836	Luerss(en)	Pasq(uale)
Guill(emin)	Kaempf(er)	Macfad(yen)	Pav(on)
Guss(one)	Karst(en)	Maing(ay)	Perr(ottet)
Hack(el)	Kaulf(uss)	Mak(ino)	Pers(oon)
Hall(er)	Kell(ogg)	Marcgr(af)	Peterm(ann)
Ham(ilton)	Kl(otzsch)	Markh(am)	Peyr(itsch)
Hanst(ein)	Knaut(ius)	Mart(ius)	Pfeiff(er)
Hartm(ann)	Koel(er)	Mast(ers)	Pftz(er)
Hartw(eg)	Koen(ig)	Maxim(owicz)	Phil(ippi)
Harv(ey)	Koern(icke)	Medic(us)	Planch(on)
Hassk(arl)	Kon(ig)	Meissn(er)	Pluk(enet)
Haw(orth)	Korth(als)	Mert(ens)	Plum(ier)
Hedw(ig)	Kostel(etzky)	Mett(enius)	Poepp(ig)
Hegelm(aier)	K(un)tze, O.	Mey(er)	Poir(et)
Heist(er)	K(un)ze	Mich(au)x	Poll(ich)
Hemsl(ey)	L(innaeus)†	Mich(eli)	Ponted(era)
Henfr(ey)	1707-78	Mig(uel)	Pr(esl)
Herb(ert)	Labill(ardière)	Mihi, of me	Putterl(ick)
Herm(ann)	Lag(asca)	Mik(an)	Racib(orski)
Hern(andez)	Lam(arck)	Mill(er)	Radlk(ofer)
Hieron(ymus)	Lamb(ert)	Miq(uel)	Raf(inesque)
Hildebr(and)	Langsd(orff)	Mirb(el)	R(obert) Br(own)
Hill(ebrand)	Lapeyr(ouse)	Mitch(ell)	Red(outé)
Hochst(etter)	Laxm(ann)	Moc(ino)	Reich(ardt)
Hoffm(ann)	Leandr(o)	Moehr(ing)	R(ei)ch(en)b(ach)
Hoffm(an)s(eg)g	Leavenw(orth)	Mol(ina)	Reinw(ardt)
Honck(ene)	Ledeb(our)	Monn(ier)	Reiss(eck)
H(oo)k(er)	Lehm(ann)	Moquin-Tandon)	Retz(ius)
Hook(er)	Lej(eune)	Morr(en)	Reut(er)
Hook. f(ilius)*	Lem(aire)	Muehlenb(erg)	Rich(ard)
Horan(inow)	Lepr(ieur)	Muell-Arg(au)	Ridl(ey)
Hort(orum), of	Lesch(enault)	Muell(er)	Riv(inus)‡
gardens	Less(ing)	Muell, H(erd. v.)	Roem(er)
Houst(on)	Lestib(oudois)	Murr(ay)	Rohrb(ach)
Houtt(uyn)	L. f(ilius)	Naud(in)	Roth(ert)
Huds(on)	L'Herit(ier)	Neck(er)	Rottb(oell)
Humb(oldt)	Licht(enstein)	Newm(an)	Roxb(urgh)
H(umboldt),	Liebm(ann)	Nied(en)z(u)	Rudb(eck)
B(onpland)	Lindl(ey)	Nor(onha)	Rumph(ius)
& K(unth)	1799-1865	Nutt(all)	Rupp(ius)
Isn(ard)	Lindm(ann)	Nyland(er)	Rupr(echt)
Jacks(on)	Linn(aeus)†	Nym(an)	Sadeb(eck)
Jacq(uin)	Loefl(ing)	Oerst(ed)	Sald(anha)
Jenm(an)	Loes(ener)	Oliv(er)	Salisb(ury)
Jord(an)	Loud(on)	Ort(ega)	Sanguin(etti)
Jung(huhn)	Lour(eiro)	Parl(atore)	Sauv(ageau)

* See B. & H.

† The starting point of modern nomenclature is the publication in 1753 of his *Species Plantarum*.

‡ Bachmann, 1652-1723.

Sauv(alle)	Soland(er)	Torr(ey)	Wallr(oth)
Schau(er)	Solms-Laub(ach)	Tourn(efort)	Walp(ers)
Scheff(er)	Sond(er)	1656-1708	Walt(ers)
Scheidw(eiler)	Sonn(erat)	Tratt(inick)	Warb(urg)
Schlecht(en)d(al)	Spegazz(ini)	Trautv(etter)	Warm(ing)
Schmid(el)	Splitg(erber)	Tréc(ul)	Wats(on)
Schnizl(ein)	Spr(engel)	Trev(isano)	Webb(er)
Schomb(urgk)	Steinh(eil)	Trin(ius)	Wedd(ell)
Schrad(er)	Steph(ens)	Tul(asne)	Welw(itsch)
Schreb(er)	Sternb(erg)	Turcz(aninew)	Wendl(and)
Schult(es)	Steud(el)	Turp(in)	Wettst(ein)
Schum(acher)	St Hil(aire)	Tuss(ac)	Wigg(ers)
Schum(ann)	Sw(artz)	Und(erwood)	Wikstr(om)
Scop(oli)	Tabern(aemon-	Urb(an)	Willd(enow)
Scortech(ini)	tanus) 1520-90	Vaill(ant)	Willem(et)
Seem(ann)	Targ(ioni)	Vand(elli)	Willk(omm)
Sendtn(er)	Toz(zetti)	Vell(ozo)	Wimm(er)
Ser(inge)	Taub(ert)	Vent(enat)	Wulf(enius)
Seub(ert)	Teysm(ann)	Vieill(ard)	Wydl(er)
Shuttl(eworth)	Thoms(on)	Vill(ars)	Zahlbr(uckner)
Sibth(orpe)	Thonn(ing)	Vis(iani)	Zenk(er)
Sieb(old)	Thou(ars)	Viv(iani)	Zeyh(er)
Siegesb(eck)	Thunb(erg)	Vog(el)	Zipp(el)
Smirn(ow)	Thw(aites)	Wahlenb(erg)	Zoll(inger)
Sm(ith)	Tod(aro)	Wall(ich)	Zucc(arini)
Sod(iro)			

Abdominea J. J. Smith. Orchidaceae (II. 20). 1 Java.

Abdra Greene (*Draba* L. p.p.). Cruciferae (4). 1 N. Am.

Abele tree, *Populus alba* L.

Abelia R.Br. (*Linnaea* Gronov. p.p. *EP.*). Caprifoliaceae (3). 15 As., Mex. Sta. 4, didynamous.

Abelmoschus Medic. (*Hibiscus* L. p.p.). Malv. 12 trop., Austr.

Aberemoa Aubl. (*Duguetia* St. Hil.). Anonaceae (1). 30 trop. Am.

Aberia Hochst. (*Doryalis* E. Mey. p.p. *EP.*). Flacourtiaceae (4). (Bixineae, *BH.*). 12 Afr., Ceylon. *A. caffra* Harv. et Sond. (Kei apple), and others, ed. fr.

Abies (Tourn.) L. *Synonymy*: *A. alba* Michx. = *Picea* a.; *do.* Mill. = *A. pectinata* DC.; *A. americana* Mill. = *Tsuga canadensis*; *A. californica* Hort. = *Pseudotsuga Douglasii*; *A. canadensis* Michx. = *Tsuga* c.; *do.* Mill. = *Picea alba*; *A. Cedrus* Poir. = *Cedrus Libani*; *A. Deodara* Lindl. = C. D.; *A. Douglasii* Lindl. = *Pseudotsuga* D.; *A. excelsa* Link = *A. pectinata*; *do.* Poir. = *Picea* e.; *A. Kaempferi* Lindl. = *Pseudolarix* K.; *A. Larix* Poir. = *Larix europaea*; *A. montana* Nym. = *Picea excelsa*; *A. mucronata* Rafin. = *Pseudotsuga Douglasii*; *A. nigra* Desf. or *Duroi* = *Picea* n.; *A. Omorika* Nym. = *Picea* O.; *A. orientalis* Poir. = *Picea* o.; *A. pectinata* Poir. = *Picea rubra*; *A. Picea* Lindl. = *A. pectinata* DC.; *do.* Mill. = *Picea excelsa*; *A. rubra* Poir. = *Picea* r.; *A. vulgaris* Poir. = *A. pectinata*.

Coniferae (Pinaceae, 2; see C. for generic characters). 24 N. temp. The firs are evergreen trees with needle l. borne directly on the stems.

No short shoots. On the main stem the symmetry is radial, whilst on the horizontal branches the l. twist so as to get their surfaces all much in one plane. If the top bud or *leader* be destroyed, however, a branch bud below it takes up the vertical growth and radial symmetry. Cones large, arranged much like *Pinus*; ♀ often brightly coloured, though wind-fertilised. The carpel-scales are large and appear on the outside of the cone between the ovuliferous scales. The cone ripens in one year.

A. pectinata DC. (silver-fir, Mts. of S. Eur.) yields a valuable wood, 'Strasburg' turpentine, &c. *A. balsamea* Mill. (E. N. Am., balsam fir) yields the turpentine known as Canada balsam. Many others yield useful timbers and resins. Handsome trees; commonly cult. are *A. concolor* Lindl. et Gord. (N. W. Am.), *A. firma* Sieb. et Zucc. (Japan), *A. nobilis* Lindl. (N. W. Am.), *A. Nordmanniana* Spach (Caucasus), *A. Pinsapo* Boiss. (Spain), *A. Webbia* Lindl. (Himal.).

Abietineae, a tribe of Coniferae Pinaceae.

Abildgaardia Vahl. = *Fimbristylis* Vahl p.p. (Cyper.).

Abiogenesis, spontaneous generation.

Abobra Naud. Cucurbitaceae (3). 1 temp. S. Am.

Abola Lindl. Orchidaceae (II. 19). 1 Colombia.

Abolboda Humb. et Bonpl. Xyridaceae. 10 S. Am.

Abortion, imperfect or arrested development.

Abroma Jacq. Sterculiaceae. 10 trop. As. to Austr. *A. augusta* L. (Indomal.) bark yields a good fibre.

Abronia Juss. Nyctaginaceae. 30 N. Am. Anthocarp winged.

Abrophyllum Hook. f. Saxifragaceae (v). 1 E. Austr.

Abrotanella Cass. Compositae (7). 15 Rodriguez, Tierra del Fuego, Austr., N.Z., Auckland Is.

Abrotanum (Tourn.) L. = *Artemisia* Tourn. p.p. (Compos.).

Abrus L. Leguminosae (III. 9). 6 trop. *A. precatorius* L. has hard red seeds with black tips (crab's eyes), strung into necklaces, rosaries, &c., and used as weights (rati) in India (cf. *Adenanthera*). See *Kew Bull.* 1890, p. 1 (Weather Plant). The roots are used in India as Indian liquorice.

Absinthe, *Artemisia*.

Absinthium Tourn. ex L. = *Artemisia* Tourn. p.p. (Compos.).

Absolmsia O. Ktze. (*Astrostemma* p.p. *BH.*). Asclepi. (II. 1). 1 Borneo.

Abundance (Cl.), the total number of individuals in an area.

Abuta (Barr.) Aubl. Menispermaceae. 10 trop. S. Am. *A. rufescens* Aubl. (Guiana) yields white Pareira root.

Abutilon Tourn. Malvaceae (2). 100 trop. and sub-trop. No epicalyx. Fl. mech. like *Malva silvestris*, but some are self-sterile; the sta. do not move down, and the styles emerge through the anther-mass. Many visited by humming-birds. *A. Avicennae* Gaertn. cult. in China for fibre China jute.

Abyssinian banana, *Musa Ensete* J. F. Gmel.; **primrose**, *Primula*.

Acacallis Lindl. (*Aganisia* Lindl. *EP.*). Orchid. (II. 13). 1 N. Brazil.

Acacia (Tourn.) L. Leguminosae (I. 2). 500 trop. and sub-trop., mostly trees (wattles); typical leaf-form bipinnate with ∞ leaflets and small scaly stips. About 300 sp., forming the § *Phyllodineae* (chiefly in Austr., where they are char., and Polynes.), have simple leaf-like *phyllodes*, i.e. petioles flattened so as to place their surfaces

vertically—this exposes less surface to radiation. A mere inspection, though it shows the phyllode to be a leaf-structure (it has an axillary bud), does not show that it is not a l. turned edgewise, though it shows no twist at the base. Occasionally however there are *reversions to type* (i.e. to the ancestral form) on the plant, some phyllodes occurring with leaf-blades of the ordinary bipinnate type. This is still better seen in germinating seedlings. The first l. are typical bipinnate l., followed by others with slightly flattened stalks and less blade, and so on, until finally only phyllodes are produced. In *A. alata* R.Br. and others, the phyllodes are decurrent on the stem, like the l. of thistles. In many the stips. are repres. by large thorns, swollen at the base. In *A. sphaerocephala* Cham. et Schlecht. (Cent. Am.), the thorns are inhabited by colonies of ants, which bore into them and clear out the internal tissue. The ants live on the A. and are fed by it. Extrafl. nectaries occur on the petioles, and yellow sausage-shaped *food-bodies* on the tips of the leaflets. These consist of parenchymatous cells containing food-stuffs, and are eaten by the ants. If attempt be made to interfere with the tree the ants rush out. (Cf. Cecropia, and see *Nature*, Aug. 1893, for an account of the leaf-cutting ants: and cf. Schimper, *Plant Geogr.* p. 140. This was the first case of *myrmecophily* (symbiosis with ants) discovered; see Belt's *Naturalist in Nicaragua*.) Other sp. are myrmecophilous also.

A few are twiners, others hook-climbers. Most are xerophytes, often forming char. features in vegetation and scenery, e.g. the babul (*A. arabica* Willd.) with its low, spreading habit, is almost the only tree in many parts of the dry plains of India, and others are common in S. Afr. &c. In Austr. (esp. S. Austr.) the A. take a great part in the formation of the *scrub*, a concourse of shrubby plants of many genera, which covers the almost waterless country with a waste of veg. about 6—10 feet high, of a general bluish green effect, and with few herbs or grasses beneath.

The fl. (diagram, see order) has ∞ long sta., affording little protection to the pollen. In *A. homalophylla* A. Cunn. (S. E. Austr.; Myall) the seed hangs out on a long red funicle.

Many valuable products. *A. Senegal* Willd. (Soudan) yields the best gum-arabic; the gum exudes from the branches principally during the prevalence of the dry desert winds. Other sp. yield inferior qualities. *A. catechu* Willd. (E. Ind.) yields catechu or cutch (used in tanning), by digestion of the wood in hot water. With this the true khaki cloth is dyed and shrunk. *A. decurrens* Willd. (Austr.; black wattle) yields good tan-bark; inferior barks from *A. pycnantha* Benth. (S. E. Austr.; golden wattle), *A. dealbata* Link (Austr.; silver wattle) &c. That of *A. arabica* Willd. is largely used in India. The wood of many is valuable, esp. Australian black-wood, *A. melanoxylon* R.Br. Many have sweetly scented fls.; those of *A. Farnesiana* Willd. (trop.) are the Cassie flowers of perfumery. *A. armata* R.Br. (temp. Austr.; kangaroo thorn), *A. horrida* Willd. (S. Afr.) &c. form good hedges or sandbinders.

Acacia, false, *Robinia Pseud-acacia* L.

Acaena L. Rosaceae (III. 9). 80 ✱, Mex., Calif., Polynes. Fr. hooked. Some sp. bud from junction of leaf and stalk.

Acacia glauca - *Acacia glauca* - *Acacia glauca*

Acajou (W. I.), *Guarea trichilioides* L.

Acaju, Cashew, *Anacardium occidentale* L.

Acalypha L. Euphorbiaceae (A. II. 2). 300 trop., S. Afr. Anther lobes twisted; stigmas branched. Several cult. for varieg. l.

Acampe Lindl. Orchidaceae (II. 16). 12 Indomal., China, (Afr. *BH.*).

Acamptocladus Nash (*Eragrostis* Host, p.p.). Gramin. (II. 1). 1 S.W. U.S.

Acamptopappus A. Gray (*Aplopappus* Cass. *BH.*). Comp. (3). 2 N. Am.

Acanthaceae (*EP.*, *BH.*). Dicots. (Sympet. Tubiflorae). 140 gen., 2000 sp., esp. trop. but also Medit., U.S., Austr. 4 chief centres of distr.: Indomalaya, char. by Strobilanthes and Andrographidae, Afr. (Thunbergia and Barleria), Braz. (Mendoncia and Ruellia), and Centr. Am. (Aphelandreae and Odontonema). Many biological types—climbing plants, xerophytes, marsh plants, &c.—and much variety in habit. Very many in damp places in trop. forests. Trees are rare; most are shrubs or herbs with opp., usu. decussate and entire, exstip. l., usu. thin. Cystoliths, visible as streaks or protuberances, are usu. common on l. and stems. Infl. most commonly a dich. cyme, in its ultimate branchings tending to monoch., and frequently condensed in the leaf-axils as in Labiatae. Racemose infls. also occur, and sol. fl. are common. Bracts and bracteoles usu. present, often coloured; the latter frequently large, $\pm$ enclosing the fl.

Fl. $\varnothing$, hypog., zygom., usu. with nectariferous disc below ov. K (5—4), C (5—4), commonly two-lipped (upper lip sometimes not developed, e.g. in *Acanthus*). A rarely 5, usu. 4 or 2 epipet., usu. exserted; 1—3 stds. frequently present; anthers often with one lobe smaller than the other, or abortive; connective often long (*cf.* *Salvia*). The pollen exhibits great variety of patterns (see *Nat. Pfl.*); these are generally constant in the genus, and may be used in classification. $\bar{G}$ (2), 2-loc. with axile plac. each with 2— ∞ usu. anatrop. ov. in two rows. Style usu. long with two stigmas, the post. often smaller. The general arrangement of the fl. for visits of insects, protection of pollen, &c. is like Labiatae or Scrophulariaceae.

Fr. a bi-loc. caps. (with few exceptions), usu. $\pm$ stalked, loculic. to the very base. Seeds usu. exalb. Their modes of distribution are interesting (see *Nat. Pfl.*). The capsules of § IV explode and the seeds are thrown out, largely by the aid of peculiar hook-like outgrowths from their stalks (*retinacula* or *jaculators*). Many have superficial scales and hairs which on wetting become mucilaginous (*cf.* *Linum*, *Collomia*), e.g. *Crossandra*, *Ruellia*, *Blepharis*.

Classification and chief genera (after Lindau):

- I. **NELSONIOIDEAE** (Ovules ∞ ; jaculators papilla-shaped): *Ebermaiera*, *Nelsonia*.
- II. **MENDONCIOIDEAE** (Ov. 4, seeds not more than 2. Drupe; no jac.): *Mendoncia*.
- III. **THUNBERGIOIDEAE** (Ov. 4. Capsule; jac. papilla-like): *Thunbergia*.
- IV. **ACANTHIOIDEAE** (Ov. 2— ∞ . Capsule; jac. hook-shaped):
 - A. **Contortae** (cor. conv., or never ascendingly imbr.): *Strobilanthes*, *Ruellia*, *Eranthemum*, *Barleria*.

B. Imbricatae (cor. ascendingly imbr., or with no upper lip): *Blepharis*, *Acanthus*, *Crossandra*, *Aphelandra*, *Andrographis*, *Dicliptera*, *Fittonia*, *Odontonema*, *Justicia*, *Beloperone*.

Acanthella Hook. f. Melastomaceae (1). 1 Orinoco valley.

Acantho- (Gr. prefix), thorny; **-carpous**, spiny-fruited.

Acanthobotrya Eckl. et Zeyh. = *Lebeckia* Thunb. p.p. (Legum.).

Acanthocardium Thell. (*Lepidium* p.p. *BH.*). Crucif. (2). 1 Persia.

Acanthocarpus Lehm. Liliaceae (III). 3 S.W. Austr. (*Junc. BH.*)

Acanthocephalus Kar. et Kir. Compositae (13). 2 W. As.

Acanthocereus Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 1 S. Am.

Acanthochiton Torr. Amarantaceae (2). 1 Texas, Arizona.

Acanthocladus Kl. (*Polygala* L. p.p. *EP.*). Polygalaceae. 3 S. Am.

Acanthococos Barb. Rodr. (*Cocos* L. p.p.). Palmae (IV. 2). 1 Paraguay.

Acanthodium Delile = *Blepharis* Juss. (*Acanth.*).

Acantholepis Less. Compositae (11). 1 W. As.

Acantholimon Boiss. Plumbaginaceae. 80 E. Medit., desert pl.

Acanthomintha A. Gray. Labiatae (VI). 2 Calif.

Acanthonema Hook. f. Gesneriaceae (1). 1 W. Afr.

Acanthonychia Rohrb. (*Pentacaena* Bartl.). Caryophyll. (I. 4). 5 Pac. Am.

Acanthopale C. B. Clarke. *Acanth.* (IV. A). 7 trop. Afr. (Malaya?).

Acanthopanax Miq. Araliaceae. 25 Ind., Chi., Japan.

Acanthophippium Blume. Orchidaceae (II. 9). 7 Indomal. The axial outgrowth from the base of the column, common in O., is here very great and bends first downwards, then up, removing the insertion of the lateral sepals and labellum to a distance from the column.

Acanthophoenix H. Wendl. Palmae (IV. 1). 3 Mascarenes.

Acanthophyllum C. A. Mey. Caryophyllaceae (II. 2). 25 W. As., Siberia. Mostly desert xerophytes with prickly leaves.

Acanthopsis Harv. *Acanthaceae* (IV. B). 7 S. Afr.

Acanthorhiza H. Wendl. Palmae (I. 2). 4 trop. Am. The adv. roots from the lowest nodes grow normally downwards, but those from the nodes above develop into thorny branches.

Acanthoscyphus Small (*Oxytheca* Nutt. p.p.). Polygon. (I. 1). 1 N. Am.

Acanthosicyos Welw. Cucurbitaceae (3). 1 S.W. Afr., *A. horrida* Welw., the Narras, a remarkable plant growing on sand dunes (*cf.* *Welwitschia*). The thick root is very long (up to 40 ft.). Above ground is a thorny shrub, with long tendrils; the thorns are modified twigs. (See Welwitsch, *Trans. Linn. Soc.* 27, 1869.)

Acanthospermum Schrank. Compositae (5). 5 trop. Am., Galapagos.

Acanthosphaera Warb. Moraceae (II). 1 Amazon valley.

Acanthostachys Link, Klotzsch, et Otto (*Ananas* Tourn. p.p.). Bromeliaceae (4). 1 (*A. strobilacea* L. K. et O.) Brazil.

Acanthosyris Griseb. Santalaceae. 3 temp. S. Am. Furniture wood.

Acanthothamnus T. S. Brandege. Celastraceae. 1 Mex.

Acanthotreulia Engl. Moraceae (II). 1 Cameroons.

Acanthura Lindau. *Acanthaceae* (IV. A). 1 Mattogrosso.

Acanthus Tourn. ex L. *Acanthaceae* (IV. B). 25 trop. and sub-trop., As., Afr., Eur., mostly xero. with thorny l. (those of *A. spinosus* L. furnished, it is supposed, the pattern for the decoration of the capitals of Corinthian columns). *A. ilicifolius* L. is part of the palaeotrop.

mangrove (*q.v.*) veg. Fl. a large bee-fl.; there is no upper lip to the C, and the protection of the pollen, &c. is undertaken by the K. The anthers form a box by fitting closely together at the sides, and shed their pollen sideways into it, where it is held by hairs till an insect probing for honey forces the filaments of the sta. apart and receives a shower of pollen on its head (*loose-pollen mechanism, cf. many Scrophulariaceae, Ericaceae, &c.*). In the young flr. the style is behind the anthers, later on it bends down so as to touch a visiting insect. The fr. explodes; large 'jaculators' on the seeds.

Acarna All. = *Atractylis* L. p.p. (Compos.).

Acarodomatia, cavities mite inhabited, *Anamirta, Fraxinus, Parameria*.

Acaulescent, almost stemless; **acaulis** (Lat.), without visible stem.

Accessory branch, bud, supernumerary in same axil, see *Buds*; **organs** of flower, the perianth.

Acclimatisation, adaptation to new climate.

Accrescent, enlarged and persistent.

Accumbent, see *Cruciferae*.

Aceituna, *Symplocos*.

Acentra Phil. (*Hybanthus* Jacq. p.p. *EP.*) Violaceae. 1 Chili.

Acer (Tourn.) L. Aceraceae (Sapind. *BH.*). 115 N. temp., esp. in hill districts (*A. pseudoplatanus* L., sycamore, and *A. campestre* L., maple, in Brit., the latter native) and trop. mts.; many in China and Japan. Trees and shrubs, with opp. exstip. l., deciduous or evergreen. L. often simple entire, more commonly 3- or 5-lobed, occasionally cpd. One may go through a collection of *A.* in an herbarium or elsewhere, comparing the l. as to degree of development of the *drip-tips* (acum. apices to easily wetted l., from which the water drips off rapidly after a shower, *cf. Ficus*) noting the kind of climate from which each has come. There is a correlation between length of tip and wetness of climate.

Large winter buds, covered by scale l. In many sp. transitional forms may be seen as the bud elongates in spring, between the scales and the green l., showing that the scale = not the whole l., but the leaf base. In the § *Negundo* there are no scales, but the bud is protected by the base of the petiole of the l. in whose axil it arises.

The l. commonly exhibit varnish-like smears, of sticky consistence, known as *honey-dew*, the excretion of aphides which live on the l.; the insect bores into the tissues, sucks their juices, and ejects a drop of honey-dew on an average once in half-an-hour. In passing under a tree infested with aphides one may sometimes feel the drops falling like a fine rain (see *Pithecolobium*). The fluid is rich in sugar. When the dew falls the hygroscopic honey-dew takes it up and spreads over the l.; then later in the day evap. reduces it to a varnish on the surface. Many other trees exhibit this phenomenon, *e.g.* lime, beech, oak (Büsgen, *Der Honigthau*, Jena).

Fls. in racemes, sometimes contracted to corymbs or umbels, reg., polyg., not conspic.; formula usu. $K_5, C_5, A_4+4, \underline{G} (2)$. Apetaly in some. 3 cpls. are frequent, esp. in the end fl. of a raceme. ♂ fls. protandrous; honey freely exposed on the disc (fl.-class A), available to insects of all kinds. Fr. a samara. In germination, the long green cotyledons come above the soil almost at once.

B. Imbricatae (cor. ascendingly imbr., or with no upper lip): *Blepharis*, *Acanthus*, *Crossandra*, *Aphelandra*, *Andrographis*, *Dicliptera*, *Fittonia*, *Odontonema*, *Justicia*, *Beloperone*.

Acanthella Hook. f. Melastomaceae (1). 1 Orinoco valley.

Acantho- (Gr. prefix), thorny; **-carpous**, spiny-fruited.

Acanthobotrya Eckl. et Zeyh. = *Lebeckia* Thunb. p.p. (Legum.).

Acanthocardamum Thell. (*Lepidium* p.p. *BH.*). Crucif. (2). 1 Persia.

Acanthocarpus Lehm. Liliaceae (III). 3 S.W. Austr. (*Junc. BH.*)

Acanthocephalus Kar. et Kir. Compositae (13). 2 W. As.

Acanthocereus Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 1 S. Am.

Acanthochiton Torr. Amarantaceae (2). 1 Texas, Arizona.

Acanthocladus Kl. (*Polygala* L. p.p. *EP.*). Polygalaceae. 3 S. Am.

Acanthococos Barb. Rodr. (*Cocos* L. p.p.). Palmae (IV. 2). 1 Paraguay.

Acanthodium Delile = *Blepharis* Juss. (*Acanth.*).

Acantholepis Less. Compositae (11). 1 W. As.

Acantholimon Boiss. Plumbaginaceae. 80 E. Medit., desert pl.

Acanthomintha A. Gray. Labiatae (VI). 2 Calif.

Acanthonema Hook. f. Gesneriaceae (1). 1 W. Afr.

Acanthonychia Rohrb. (*Pentacaena* Bartl.). Caryophyll. (I. 4). 5 Pac. Am.

Acanthopale C. B. Clarke. *Acanth.* (IV. A). 7 trop. Afr. (Malaya?).

Acanthopanax Miq. Araliaceae. 25 Ind., Chi., Japan.

Acanthophippium Blume. Orchidaceae (II. 9). 7 Indomal. The axial outgrowth from the base of the column, common in O., is here very great and bends first downwards, then up, removing the insertion of the lateral sepals and labellum to a distance from the column.

Acanthophoenix H. Wendl. Palmae (IV. 1). 3 Mascarenes.

Acanthophyllum C. A. Mey. Caryophyllaceae (II. 2). 25 W. As., Siberia. Mostly desert xerophytes with prickly leaves.

Acanthopsis Harv. Acanthaceae (IV. B). 7 S. Afr.

Acanthorhiza H. Wendl. Palmae (I. 2). 4 trop. Am. The adv. roots from the lowest nodes grow normally downwards; but those from the nodes above develop into thorny branches.

Acanthoscyphus Small (*Oxytheca* Nutt. p.p.). Polygon. (I. 1). 1 N. Am.

Acanthosicyos Welw. Cucurbitaceae (3). 1 S.W. Afr., *A. horrida* Welw., the Narras, a remarkable plant growing on sand dunes (*cf.* *Welwitschia*). The thick root is very long (up to 40 ft.). Above ground is a thorny shrub, with long tendrils; the thorns are modified twigs. (See Welwitsch, *Trans. Linn. Soc.* 27, 1869.)

Acanthospermum Schrank. Compositae (5). 5 trop. Am., Galapagos.

Acanthosphaera Warb. Moraceae (II). 1 Amazon valley.

Acanthostachys Link, Klotzsch, et Otto (*Ananas* Tourn. p.p.). Bromeliaceae (4). 1 (*A. strobilacea* L. K. et O.) Brazil.

Acanthosyris Griseb. Santalaceae. 3 temp. S. Am. Furniture wood.

Acanthothamnus T. S. Brandege. Celastraceae. 1 Mex.

Acanthotreculia Engl. Moraceae (II). 1 Cameroons.

Acanthura Lindau. Acanthaceae (IV. A). 1 Matto Grosso.

Acanthus Tourn. ex L. Acanthaceae (IV. B). 25 trop. and sub-trop., As., Afr., Eur., mostly xero. with thorny l. (those of *A. spinosus* L. furnished, it is supposed, the pattern for the decoration of the capitals of Corinthian columns). *A. ilicifolius* L. is part of the palaeotrop.

mangrove (*q.v.*) veg. Fl. a large bee-fl.; there is no upper lip to the C, and the protection of the pollen, &c. is undertaken by the K. The anthers form a box by fitting closely together at the sides, and shed their pollen sideways into it, where it is held by hairs till an insect probing for honey forces the filaments of the sta. apart and receives a shower of pollen on its head (*loose-pollen mechanism*, *cf.* many Scrophulariaceae, Ericaceae, &c.). In the young fl. the style is behind the anthers, later on it bends down so as to touch a visiting insect. The fr. explodes; large 'jaculators' on the seeds.

Acarna All. = *Atractylis* L. p.p. (Compos.).

Acarodomatia, cavities mite inhabited, *Anamirta*, *Fraxinus*, *Parameria*.

Acaulescent, almost stemless; **acaulis** (Lat.), without visible stem.

Accessory branch, bud, supernumerary in same axil, see *Buds*; **organs** of flower, the perianth.

Acclimatisation, adaptation to new climate.

Accrescent, enlarged and persistent.

Accumbent, see *Cruciferae*.

Aceituna, *Symplocos*.

Acentra Phil. (*Hybanthus* Jacq. p.p. *EP.*) Violaceae. 1 Chili.

Acer (Tourn.) L. Aceraceae (Sapind. *BH.*). 115 N. temp., esp. in hill districts (*A. pseudoplatanus* L., sycamore, and *A. campestre* L., maple, in Brit., the latter native) and trop. mts.; many in China and Japan. Trees and shrubs, with opp. exstip. l., deciduous or evergreen. L. often simple entire, more commonly 3- or 5-lobed, occasionally cpd. One may go through a collection of A. in an herbarium or elsewhere, comparing the l. as to degree of development of the *drip-tips* (acum. apices to easily wetted l., from which the water drips off rapidly after a shower, *cf.* *Ficus*) noting the kind of climate from which each has come. There is a correlation between length of tip and wetness of climate.

Large winter buds, covered by scale $\bar{l}$. In many sp. transitional forms may be seen as the bud elongates in spring, between the scales and the green l., showing that the scale = not the whole l., but the leaf base. In the § *Negundo* there are no scales, but the bud is protected by the base of the petiole of the l. in whose axil it arises.

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A. saccharum Marshall (*A. saccharinum* Wangenh.) and others of the E. U. S. yield maple sugar (2—4 lb. a tree) obtained by boring holes in February and March and collecting and evaporating the juice. Many yield good timber and charcoal. A number of Japanese sp. with prettily shaped or varieg. l., cult. as orn. shrubs.

Aceraceae (*Sapind.* p.p. *BH.*). Dicot. (Archichl. Sapindales). 2 gen. (*Acer*, *Dipteronia*) with 120 sp. N. temp. and trop. mts. Trees and shrubs; l. opp., petiolate, exstip., simple entire or more often palmately or pinnately lobed or cpd. Infl. racemose, corymbose, or fasciculate. Fls. reg., andromonoec., androdioec., dioec., &c., 5-4-merous, usu. dichlam. Disc annular or lobed or reduced to teeth, rarely absent. A 4—10, usu. 8, hypog., perig., or on disc; ♂ fl. with rudimentary G. $\underline{G}$ (2), 2-loc., lat. compressed; styles 2, free or joined below; ov. 2 in each loc., orthotr. to anatr., with dorsal raphe. Fr. of 2 samaras, separating when ripe. Seeds usu. solitary, even the cotyledons irreg. folded. Many yield good timber, sugar, (*cf.* *Acer*). Largely represented in the Tertiary.

Aceranthus Morr. et Decne. (*Epimedium* Tourn. *EP.*). Berberidaceae. 3 Chi., Jap.

Aceras R.Br. Orchidaceae (II. 1). 1 Eur. (incl. Brit.), Medit., *A. anthropophora* R.Br., the man-orchis. Like Orchis.

Acerates Ell. = *Gomphocarpus* R. Br. p.p. (*Asclepiad.*).

Aceriphyllum Engl. Saxifragaceae (1). 1 N. China.

Acerose, needle-shaped.

Acetabuliform, like a shallow saucer.

Acetosa Tourn. ex Mill. = *Rumex* Linn. (*Polygon.*).

Acetosella Moehr. = *Oxalis* Linn. (*Oxalid.*).

-**aceus** (Lat. suffix), like.

Achaenipodium T. S. Brandege. Compositae (5). 1 Mex.

Achaetogeron A. Gray. Compositae (3). 10 Mex., Calif.

Achantia A. Chevalier. Sterculiaceae. 1 trop. Afr.

Acharia Thunb. Achariaceae. 1 S. Afr.

Achariaceae (*Passifloraceae*, p.p. *BH.*). Dicot. (Archichl. Parietales). 3 gen., 3 sp. S. Afr. Herbs or undershrubs with reg. monoec. fl. K₃—5, C (3—5), A 3—5 epipet., $\underline{G}$ (3—5) with ∞ ov. on parietal plac. Caps. Endosp.

Acharitea Benth. Verbenaceae (3). 2 Madag.

Achatocarpus Triana. Phytolaccaceae (*Amarant. BH.*). 10 trop. Am.

Achene, a one-seeded small dry indehiscent fruit (*q.v.*) of 1 carpel.

Achetaria Cham. et Schlecht. = *Beyrichia* Cham. (*Scrophular.*).

Achillea L. Compositae (7). 115 N. temp. *A. Millefolium* L. (yarrow or milfoil) and *A. Ptarmica* L. (sneezewort) in Brit.

Achilus Hemsl. Zingiberaceae (1). 1 Siam. No stds. Unisex. fl.

Achimenes P.Br. Gesneraceae (11). 25 trop. Am., often cult.

Achlaena Griseb. Gramineae (6). 1 Cuba.

Achlamydeous, without a perianth (*q.v.*).

Achlamydosporeae (*BH.*). The sixth series of Monochlamydeae.

Achlys DC. Berberidaceae. 2 Japan and Pacif. N. Am. The perianth aborts early in development.

Achneria Munro. Gramineae (9). 8 S. and trop. Afr.

Achnophora F. Muell. Compositae (3). 1 Austr.

- Achradotypus** Baill. Sapotaceae (1). 4 New Cal.
- Achras** L. Sapotaceae (1). 1 W. Ind., trop. Am., *A. Sapota* L., cult. for ed. fr. (Sapodilla plum). The coagulated resinous latex (chicle gum) is used in U.S. for chewing-gum, statuettes, &c.
- Achratinis** O. Ktze. = *Arachnites* Phil. (Burmamn.).
- Achroanthes** Raf. (*Microstylis* Nutt. p.p. *BH.*). Orchid. (II. 4). 1 N. Am.
- Achudemia** Blume. Urticaceae (2). 2 Java, Japan (?).
- Achyrachaena** Schau. Compositae (5). 1 N.W. U.S. Pappus of broad, silvery scales; fruit-heads used as 'everlastings.'
- Achyranthes** L. Amarantaceae (2). 15 trop. and sub-trop.
- Achyrocline** Less. Compositae (4). 25 Madag., trop. Afr. and Am.
- Achyronia** Royen ex L. = *Aspalathus* L. (Legumin.).
- Achyronychia** Torr. et A. Gray. Caryophyll. (1. 4) (Illecebr. *BH.*). 3 S.W. U.S., Mex.
- Achyropappus** H. B. et K. = *Schkuhria* Roth. p.p. (Compos.).
- Achyrophorus** Adans. = *Hypochaeris* Linn. p.p. (Compos.).
- Achyropsis** Benth. et Hook. f. (*Achyranthes* L. p.p. *EP.*). Amarant. (2). 3 Afr.
- Achyrosperrum** Blume. Labiatae (VI). 12 trop. Afr. to Malay Is.
- Achyrostephus** Kze. Compositae (inc. sed.). Nomen.
- Achyrothalamus** O. Hoffm. Compositae (12). 2 E. trop. Afr.
- Aciachne** Benth. Gramineae (8). 1 trop. S. Am.
- Acianthus** R.Br. Orchidaceae (II. 2). 12 Austr., N.Z., New Caled.
- Acicalyptus** A. Gray. Myrtaceae (1). 3 Fiji (New Cal.?).
- Acicarpa** Juss. Calyceraceae. 5 S. Am.
- Acicular**, needle-shaped.
- Acidanthera** Hochst. Iridaceae (III). 16 trop. and S. Afr. Cult.
- Acidocroton** Griseb. Euphorbiaceae (A. II. 3). 1 Cuba.
- Acidoton** Sw. Euphorbiaceae (A. II. 2). 3 W. I.
- Acies**, the edge.
- Acinaciform**, scimitar-shaped.
- Acineta** Lindl. Orchidaceae (II. 13). 10 Cent. Am., Mexico. An axial outgrowth carries out 2 sep. and the labellum (attached to the column).
- Acinodendron** O. Ktze. (-*drum* L. *BH.*) = *Miconia* Ruiz et Pav. (Melastom.).
- Acinous** Rupp., Moench. = *Calamintha* Lam. (Labiata.).
- Acioa** Aubl. (*Couepia* *BH.*). Ros. (VI. b). 1 N.E. S. Am. with ed. oily seed, 20 trop. Afr.
- Aciotis** D. Don. Melastomaceae (1). 30 trop. Am., W. Ind.
- Aciphylla** Forst. Umbelliferae (III. 5). 25 Austr., N.Z.
- Acis** Salisb. = *Leucojum* L. (Amaryllid.).
- Acisanthera** P.Br. Melastomaceae (1). 20 trop. Am., W. Ind.
- Ackama** A. Cunn. Cunoniaceae (*Saxifrag.* *BH.*). 2 N. Z., E. Austr., New Guinea.
- Acleisanthes** A. Gray. Nyctaginaceae. 8 Mex., Texas.
- Aclisia** E. Mey. = *Pollia* Thunb. p.p. (Commelin.).
- Acmadenia** Bartl. et Wendl. f. Rutaceae (1). 15 S. Afr.
- Acmmanthera** Griseb. Malpighiaceae (II). 2 S. Am.
- Acmella** Rich. = *Spilanthus* Jacq. (Compos.).
- Acmena** DC. = *Eugenia* L. p.p. (*BH.*) = *Syzygium* Gaertn. p.p.
- Acmopyle** Pilger (*Dacrydium* Soland. p.p.). Taxaceae. 1 New Cal.

- Acnida** L. Amarantaceae (2). 3 U.S. Dioecious.
- Acnistus** Schott. Solanaceae (2). 20 trop. Am.
- Acoelorrhaphe** H. Wendl. Palmaceae (1. 2). Nomen.
- Acokanthera** G. Don. Apocynaceae (1. 1). 3 Abyss., S. Afr., *A. venenata* G. Don, root and wood supplies Zulu arrow-poison.
- Acom** (W.I.), *Dioscorea bulbifera* L.
- Acomastylis** Greene (*Potentilla* et *Geum* p.p.). Rosac. (III. 2). 5 N. Am.
- Acomis** F. Muell. Compositae (4). 3 Austr.
- Acosmosperma** K. Schum. Asclepiadaceae (nomen). 1 Amazon valley.
- Aconceveibum** Miq. Euphorbiaceae (B. II). 1 Java.
- Aconite**, **Aconitin**, *Aconitum*; **winter-**, *Eranthis hyemalis* Salisb.
- Aconitum** Tourn. ex L. Ranunculaceae (2). 80 N. temp. *A. Napellus* L. (aconite, monkshood, wolf's bane) in Brit. Fls. in racemes (see order). The post. sepal forms a large hood, enclosing the two 'petals' which are repres. by nectaries on long stalks. Fl. protandrous, adapted, by its structure and its blue colour, to bees. The distribution of *A.* largely coincides with that of the humble-bee (*Bombus*). Humble-bees often rob the flr. of its honey by biting through the hood. Fr. of follicles which open so far as to expose the seeds, which only escape when shaken by wind or otherwise (*censer-mechanism*). All are poisonous; the tuberous roots contain alkaloids of the aconitin group (used in medicine). *A. ferox* Wall (root) furnishes the Bikh poison of Nepal.
- Acontias** Schott = *Xanthosoma* Schott, p.p. (Arac.).
- Acophorum** Gaudich. Gramineae. Nomen nudum.
- Acorellus** Palla ex Kneuck (*Cyperus* L. p.p.). Cyper. (1). 3 S. Eur., Medit.
- Acoridium** Nees et Meyen (*Ceratostylis* Blume, *Dendrochilum* Blume). Orchidaceae (II. 3). 45 Indomal.
- Acorn**, *Quercus*.
- Acorus** L. Araceae (1). 2 N. temp., S.E. As. *A. Calamus* L. (sweet flag) Brit. Rhiz. sympodial; l. isobil. Fl. ♀, protog., with P. Used in flavouring.
- Acotyledones** (Jussieu) = Cryptogamae.
- Acourtia** D. Don = *Perezia* Lag. (Compositae).
- Acquired characters**, non-hereditary, arising during life.
- Acradenia** Kipp. Rutaceae (1). 1 Tasm.
- Acrandra** Berg. (*Campomanesia* Ruiz et Pav. *BH.*). Myrtaceae (1. 1). 2 S. trop. Braz.
- Acranthera** Arn. Rubiaceae (1. 7). 9 Indomal.
- Acranthous**, cf. *Orchidaceae*.
- Acridocarpus** Guill. et Perr. Malpighiaceae (1). 20 Afr., Madag., Arabia.
- Acriopsis** Reinw. Orchidaceae (II. 16). 10 E. Indomal.
- Acrista** O. F. Cook. Palmae (IV. 1). 1 Porto Rico.
- Acritochaete** Pilger. Gramineae (5). 1 Kilimanjaro.
- Acriulus** Ridl. Cyperaceae (II). 2 Madag., Angola.
- Acro-** (Gr. pref.), apical; **-carpous**, with terminal fruit; **-gamae** = Porogamae; see Chalazogamae; **-gens**, ferns and mosses; **-nychius** (Lat.), curved like a claw; **-petal**, produced successively towards

the apex; **-phytium** (Cl.), an alpine-plant-formation; **-scopic**, facing the apex; **-spire**, plumule; **-tonic**, cf. *Orchidaceae*.

Acrobotrys K. Schum. et Krause. Rubiaceae (I. 3). 1 Colombia.

Acrocarpidium Miq. = *Peperomia* Ruiz et Pav. (Piper.).

Acrocarpus Wight ex Arn. Leguminosae (II. 7). 3 Indomal.

Acrocephalus Benth. Labiatae (VII). 40 Malay Arch. to trop. Afr.

Acrochaene Lindl. Orchidaceae (II. 16). 1 Sikkim.

Acroclinium A. Gray = *Helipterum* DC. p.p. (Comp.).

Acrocoelium Baill. Icacinaceae (Olacineae, *BH.*). 1 Congo.

Acrocomia Mart. Palmae (IV. 2). 10 trop. Am., W. Ind.

Acrodiclidium Nees. Lauraceae (II). 20 trop. Am., W. I. *A. Puchury*

Mez furnishes the ed. puchurim nuts.

Acroglochin Schrad. Chenopodiaceae (A). 1 N. India, China.

The fruit mass is prickly, many of the twigs not ending in fls.

Acrolasia Presl. (*Mentzelia* L.). Loasaceae. 25 N. Am.

Acrolophia Pfitz. (*Eulophia* R. Br. p.p.). Orchidaceae (II. 5). 9 S. Afr.

Acronychia Forst. Rutaceae (IV). 20 trop. As., Austr.

Acropera Lindl. = *Gongora* Ruiz et Pav. p.p. (Orchid.).

Acrophorus Presl. Polypodiaceae. 1 Indomal.

Acrophyllum Benth. Cunoniaceae (Saxifrag. *BH.*). 1 New S. Wales.

Acropogon Schlechter. Sterculiaceae. 3 New Cal.

Acrosanthes Eckl. et Zeyh. Aizoaceae (II). 5 S. Afr.

Acrosepalum Pierre (*Ancistrocarpus* Oliv. *EP.*). Tiliaceae. 1 trop. Afr.

Acrospira Welw. (*Debesia* O. Ktze. *EP.*). Liliaceae (III). 3 Angola.

Acrostemon Klotzsch (*Eremia* D. Don, p.p.). Ericaceae (IV. 2). 9 S. Afr.

Acrostichum L. Polypodiaceae. 4 trop. *A. aureum* L. is common on trop. coasts.

Acrostylia Frappier. Orchidaceae (II. 1). 1 Reunion.

Acrotome Benth. Labiatae (VI. 1). 5 S. and trop. Afr.

Acrotrema Jack. Dilleniaceae. 10 Indomal.

Acrotriche R. Br. Epacridaceae (3). 8 temp. Austr.

Acrymia Prain. Labiatae (I). 1 Malay Penin.

Actad (Cl.), plant of a rocky sea-shore.

Actaea (Tourn.) L. (*BH.* excl. *Cimicifuga* L.). Ranunculaceae (2). 10 N.

temp. *A. spicata* L. (bane-berry or herb-christopher), in Brit. Fls.

in racemes (cf. *Aconitum*). Cpl. 1. Berry.

Actephila Blume. Euphorbiaceae (A. I. 1). 10 Indomal., Austr.

Actinanthus Ehrenb. (*Oenanthe* Tourn. p.p. *EP.*). Umbellif. (III. 5).

1 W. As.

Actinea Juss. = *Cephalophora* Cav. *BH.* = *Actinella* Pers.

Actinella Nutt. Compositae (6). 20 Am. (dwarf sunflower).

Actinella Pers. = *Actinella* Nutt. *EP.*

Actinidia Lindl. Dilleniaceae (Ternstroem. *BH.*). 10 E. As.

Actiniopteris Link. Polypodiaceae. 1 trop. Afr., As. It has the

habit of a small palm with fan leaves.

Actinocarya Benth. Boraginaceae (IV. 1). 1 Tibet.

Actinochloa Willd. = *Bouteloua* Lag. (Gramin.).

Actinodaphne Nees. Lauraceae (1). 50 E. Ind., Japan, N. Am.

Actinodium Schau. Myrtaceae (II. 3). 1 W. Austr.

Actinokentia Dammer. Palmae (IV. 1). 1 New Cal.

Actinolema Fenzl. (*Astrantia* Tourn. *BH.*). Umbellif. (II. 1). 2 E. Medit.

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- Actinolepis** DC. (*Eriophyllum* Lag. p.p.). Compos. (6). 9 West U.S.
- Actinomeris** Nutt. Compositae (5). 3 Atl. U.S.
- Actinomorphie** (fl.), radially symmetrical, or symmetrical about any plane passing through the centre (includes cases like most Sympetalae, where there are only two carpels and more of other whorls).
- Actinophloeus** Becc. (*Drymophloeus* Zipp. p.p.). Palmae (IV. 1). 1 New Guinea.
- Actinophora** Wall. (*Schoutenia* Korth. BH.). Tiliaceae. 3 trop. As.
- Actinophyllum** Ruiz et Pav. = *Sciadophyllum* P. Br. BH. = *Schefflera* Forst. (Aral.).
- Actinorhytis** Wendl. et Drude. Palmae (IV. 1). 1 Malaya.
- Actinoschoenus** Benth. Cyperaceae (II). 3 China, Ceylon, Madag.
- Actinostemma** Griff. Cucurbitaceae (I). 6 Ind. to Japan.
- Actinostemon** Mart. ex Klotzsch. Euphorbiaceae (A. II. 7). 30 trop. Am.
- Actinostrobus** Miq. Coniferae (Pinaceae 4; see C. for generic characters). 2 S.W. Austr.
- Actinotus** Labill. Umbelliferae (I. 1). 15 Austr. (flannel flower).
- Actium** (Cl.), rocky sea-shore formation.
- Actoplanes** K. Schum. Marantaceae. 2 Malaya.
- Aculeate, Aculeatus** (Latin), prickly.
- Acuminate**, tapering to a point in hollow curves.
- Acura** Hill. Compositae. Nomen.
- Acute**, tapering to a sharp point in straight lines.
- Acutifolius** (Lat.), with acute leaf.
- Acyclic**, not in whorls.
- Ad-** (Lat. pref.), to; **-axial** (side), the side towards the axis; **-hesion**, concrescence (*q.v.*) of dissimilar organs, *e.g.* C and A; **-justment** (Cl.), functional response to stimuli; **-nascens** (Lat.), growing upon something; **-pressed**, appressed; **-verse**, facing the main axis.
- ad** (Cl.), suffix denoting an ecad.
- Ada** Lindl. Orchidaceae (II. 19). 2 Colombia. Cult.
- Adactylus** Rolfe (*Apostasia* Blume p.p.). Orchidaceae (I. 1). 3 trop. As.
- Adamia** Wall. = *Dichroa* Lour. (Saxifrag.).
- Adam's needle, Yucca.**
- Adansonia** L. Bombacaceae (I). 10 palaeotrop. *A. digitata* L. is the baobab. Its height is not great, but the trunk may reach 30 feet in thickness. Fr. woody. (See *Gard. Chr.* 1900, 57.)
- Adaphus** Neck. Inc. sed. (= *Laurus* Tourn.?).
- Adaptable** (Cl.), able to originate ecads.
- Adaptation**, adjustment to conditions of life.
- Adder's tongue, Ophioglossum.**
- Addisonia** Rusby. Compositae (2). 1 Bolivia.
- Adelia** L. Euphorbiaceae (A. II. 2). 15 W.I., Colombia.
- Adelia** P. Br. = *Forestiera* Poir (Olea.).
- Adeliopsis** Benth. Menispermaceae. 1 N.E. Austr.
- Adelmeria** Ridl. (*Elmeria* Ridl.). Zingiberaceae. 2 Phil. Is.
- Adelobotrys** DC. Melastomaceae (I). 15 trop. Am., W.I.
- Adelodopsis** Becc. (*Dypsia* Nor. p.p.). Palmae (IV. 1). 2 Madag.
- Adelonema** Schott (*Homalonema* p.p. BH.). Araceae (v). 1 Amazon.
- Adelonenga** Becc. (*Nenga* p.p.). Palmae (IV. 1). 2 New Guinea.

- Adelopetalum** Fitzger. Orchidaceae (II. 3). 1 New S. Wales.
Adelosa Blume. Verbenaceae (4). 1 Madag.
Adelostemma Hook. f. Asclepiadaceae (II. 1). 1 Burma.
Adelostigma Steetz. Compositae (3). 2 trop. Afr.
Aden- (Gr. pref.), a gland; **-oid**, gland-like; **-ophore**, stalk supporting a gland.
Adenandra Willd. Rutaceae (1). 25 S. Afr. Cult. orn. fl.
Adenanthra Royen ex L. Leguminosae (I. 4). 5 trop. As., Austr.
 Seeds hard and bright red, or red and black (*cf.* Abrus).
Adenanthos Labill. Proteaceae (1). 20 W. and S. Austr.
Adenaria H. B. et K. Lythraceae. 1 Mex. to Arg.
Adeneleuthera O. Ktze. = *Adeneleutherophora* Barb. Rodr.
Adeneleutherophora Barb. Rodr. Orchidaceae (II. 6). 1 Brazil.
Adenia Forsk. (*Modecca* L. *BH.*). Passiflor. 50 palaeotrop.
Adenimesa Nieuwland = *Conophora* Nieuwland (Compositae).
Adenium Roem. et Schult. Apocynaceae (II. 1). 10 Arabia, Afr.
 Xerophytes with thick stems, and rather fleshy l.
Adenocalymna Mart. Bignoniaceae (1). 55 trop. Am.
Adenocarpus DC. Leguminosae (III. 3). 10 Medit., trop. Afr.
Adenocaulon Hook. Compositae (4). 3 Ind., Japan, U.S., Chili.
Adenochilus Hook. f. Orchidaceae (II. 2). 2 Austr., N.Z.
Adenochlaena Boiss. ex Baill. Euphorb. (A. II. 4). 2 Madag., Indomal.
Adenocline Turcz. Euphorbiaceae (A. II. 2). 5 S. Afr.
Adenoderris J. Sm. Polypodiaceae. 2 W.I.
Adenodolichos Harms. Leguminosae (III. 10). 12 trop. Afr.
Adenogonum Welw. ex Hiern. (*Engleria* O. Hoffm. *EP.*). Compositae (3). 2 S. Afr.
Adenogramma Reichb. Phytolaccaceae (Ficoideae *BH.*). 7 S. Afr.
Adenogynum Reichb. f. et Zöll. (*Chloradenia* Baill. *BH.*). Euphorb. (A. II. 2). 1 Java, Timor.
Adenolinum Reichb. = *Linum* L. (Lin.).
Adenolisianthus Gilg. Gentianaceae (1). 2 Brazil.
Adenoncos Blume = *Sarcophilus* R. Br. (Orchid.).
Adenoon Dalz. Compositae (1). 1 Indomal.
Adenopappus Benth. Compositae (6). 1 Mex.
Adenopeltis Bert. Euphorbiaceae (A. II. 7). 1 Chili.
Adenopetalum Klotzsch et Garcke = *Euphorbia* L. p.p. (Euphorb.).
Adenophaedra Muell.-Arg. Euphorbiaceae (A. II. 2). 1 E. Brazil.
Adenophora Fisch. Campanulaceae (1). 25 temp. Eur., As.
Adenophyllum Pers. (*Dysodia* Cav. p.p. *EP.*). Compositae (6). 3 Mex.
Adenoplea Radlk. (*Buddleia* Houst. p.p. *EP.*). Loganiaceae. 2 Madag.
Adenoplusia Radlk. Loganiaceae. 2 Madag.
Adenoporces Small (*Tetrapteris* Cav. p.p.). Malpighiaceae (1). 1 San Domingo.
Adenopus Benth. Cucurbitaceae (3). 8 trop. Afr.
Adenoropium Pohl. = *Jatropha* L. p.p. (Euphorb.).
Adenosacme Wall. (*Mycetia* Reinw. *EP.*). Rubi. (I. 7). 7 Indomal.
Adenosma Nees = *Cardanthera* Buch.-Ham. (*BH.*) = *Synnema* Benth. (Acanth.).
Adenosma R. Br. Scrophular. (II. 6). 10 Indomal., Austr., China.
Adenostegia Benth. = *Cordylanthus* Nutt. (Scrophular.). 12 N. Am.

Adenostemma Forst. Compositae (2). 6 trop. Am., 1 cosmotrop.

Pappus glandular and sticky; fr. carried by animals.

Adenostoma Blume. Scrophulariaceae. Nomen.

Adenostoma Hook. et Arn. Rosaceae (III. 3). 2 Calif. *A. fasciculatum* H. et A. is one of the shrubs forming the chaparral or chamisal.

Adenostyles Cass. Compositae (2). 6 alpine, Eur., As Minor.

Adenostylis Blume = *Zeuxine* Lindl. (Orchid.).

Adesmia DC. (*Patagonium* Schrank). Leguminosae (III. 7). 90

S. Am. Leafstalks thorny, plants often with glandular hairs.

Adhatoda Tourn. ex Medic. (*Justicia* L. p.p. *EP.*) Acanth. (IV. B). 100 trop.

Adhunia Vell. Inc. sed. 1 Brazil.

Adiantopsis Fée. Polypodiaceae. 15 trop. Am. As.

Adiantum L. Polypodiaceae. 190 cosmop., esp. trop. Am. (maiden hair); *A. Capillus-veneris* L. in Brit. (rare). Hothouse favourites. Some are climbing epiphytes.

Adicea Raf. = *Pilea* Lindl. (Urtic.).

Adina Salisb. Rubiaceae (I. 6). 15 trop. As., Afr.

Adinandra Jack. Theaceae. 15 warm As., Afr.

Adinobotrys Dunn. Leguminosae (III. 6). 5 Indomal., China.

Adlumia Rafin. Papaveraceae (III). 1 E. N. Am. A leaf-climber.

Adnaria Raf. = *Gaylussacia* H. B. et K. (Eric.).

Adnate (**adnation**), concrescence of organs of different nature, e.g. axillary shoot to main shoot or leaf, stamens to petals, &c., *Anthurium*, *Apocynaceae*, *Araceae*, *Asclepiadaceae*, *Asclepias*, *Boraginaceae*, *Chailletia*, *Compositae*, *Cuphea*, *Cyperaceae*, *Erythrochiton*, *Juglans*, *Passiflora*, *Pontederiaceae*, *Samolus*, *Solanaceae* (figure), *Spathicarpa*, *Spathiphyllum*, *Tilia*, *Zostera*; **anther**, one joined to the filament by its whole length.

Adolia Lam. (*Scutia* Comm. *BH. EP.*) Rhamnaceae. 3 trop., and S. Afr.

Adolphia Meissn. Rhamnaceae. 2 Mex., Calif.

Adonis Dill. ex L. Ranunculaceae (3). 10 N. palaeotemp. *A. autumnalis* L., pheasant's eye, Brit.

Adoxa L. Adoxaceae. 1 N. temp., incl. Brit., *A. Moschatellina* L., (moschatel). Rhiz. creeping, monopodial, bearing a flg. shoot with a few rad. l., a pair of opp. cauline l., and a small head of greenish fls., usu. 5 (a condensed dich. cyme). The term. fl. is usu. 4-merous, the lat. 5-merous (cf. *Ruta*, &c.). Fl. ♀, reg., greenish, inconspic. P of 2 whorls; the outer usu. 3-merous, sometimes regarded as an invol. formed of bract and bracteoles, but quite probably a K. Sta. alt. with petals, divided almost to the base. G (3—5), rarely (2), semi-inf. with one pend. ov. in each loc. Drupe with several stones. Endosp. Chief visitors small flies, attracted by the musky smell.

Adoxaceae (*EP.*; *Caprifol.* p.p. *BH.*) Dicots. (Sympet. Rubiales). Only genus *Adoxa* (*g.v.*). Sometimes united to Saxifragaceae; no very close relationships (see Schumann, *Morph. Studien*).

Adrastaea DC. (*Hibbertia* Andr. p.p. *EP.*) Dilleniaceae. 1 E. Austr.

Adriana Gaudich. Euphorbiaceae (A. II. 4). 5 Austr.

Adromischus Lem. (*Cotyledon* Tourn. p.p. *BH.*) Crassul. 10 S. Afr.

Adrorhizon Hook. f. Orchidaceae (II. 16). 1 Ceylon.

- Adruc** (W. Ind.), *Cyperus articulatus* L.
- Aduncate**, bent like a hook.
- Adventina** Raf. Compositae (inc. sed.). 2 N. Am.
- Adventitious** (Cl.), invading from distant formations; **buds**, arising elsewhere than normally in an axil, *Begonia*, *Bryophyllum*, *Cardamine*, *Cystopteris*, *Linaria*, *Ophioglossum*, *Pteris*, *Pyrola*; **embryo**, one formed without fertilisation, *Alchornea*, *Citrus*, *Euonymus*, *Funkia*, *Nothoscordum*; **root**, one developed from stem or leaf, *Acanthorhiza*, *Araceae*, *Bromeliaceae*, *Gramineae*, *Orchidaceae*, *Palmae* and most Monocotyledons, *Peperomia*, *Podostemaceae*, *Ranunculaceae*, &c., and cf. Aerial roots; **shoot**, one arising from root or leaf, *Ailanthus*, *Anthurium*, *Podostemaceae*, *Rafflesiaceae*, *Testudinaria*.
- Adventive** (Cl.), established temporarily.
- Adverse**, facing main axis.
- Adynamandry**, self-sterility.
- Adyseton** Adans. = *Alyssum* L. (Crucifer.).
- Aechmandra** Arn. = *Melothria* L. p.p. (Cucurbit.).
- Aechmanthera** Nees. Acanthaceae (IV. A.). 2 Himalaya.
- Aechmea** Ruiz et Pav. Bromeliaceae (4). 50 epiph., W.I., S. Am.
- Aechmolepis** Decne. Asclepiadaceae (1). 1 Angola.
- Aedesia** O. Hoffm. Compositae (1). 2 W. trop. Afr.
- Aegialitis** R. Br. Plumbaginaceae. 1 trop. Austr. and As.
- Aegiceras** Gaertn. Myrsinaceae (II. 1). 2 palaeotrop. *A. majus* Gaertn. grows in mangrove swamps together with *Rhizophora*, &c., and exhibits a similar habit, vivipary, &c.
- Aegilops** L. = *Triticum* L. p.p. (Gramin.).
- Aeginetia** L. Orobanchaceae. 2 Ceylon to Japan and Phil. Is.
- Aegiphila** Jacq. Verbenaceae (4). 40 trop. Am., W.I.
- Aegle** Correa. Rutaceae (v). 3 Indo-mal. *A. Marmelos* Correa is the bael fruit, a valuable remedy for dysentery, &c.
- Aeglopsis** Swingle. Rutaceae (v). 1 Ivory Coast.
- Aegopodium** Knaut. ex L. Umbelliferae (III. 5). 2 Eur., As. *A. Podagraria* L. the goat, gout, or bishop's weed, in Brit.
- Aegopogon** Beauv. Gramineae (3). 2 Braz. to Calif.
- Aeluropus** Trin. Gramineae (10). 5 Medit. to Ind. Halophytes.
- Aeneus** (Lat.), brass-coloured.
- Aeolanthus** Mart. Labiatae (VII). 25 Afr.
- Aeonia** (*Oeonia*) Lindl. Orchidaceae (II. 20). 5 Masc.
- Aeonium** Webb et Berth. = *Sempervivum* L. (Crassul.).
- Aequalis** (Lat.), similar in size; **Aequi-** (Lat. pref.), equal.
- Aerangis** Reichb. f. (*Angraecum* Thou. p.p. *BH.*). Orchid. (II. 20). 1 Angola.
- Aeranthus** Lindl. Orchidaceae (II. 20). 4 Madag., Masc.
- Aeranthus** Rchb. f. = *Mystacidium* Lindl. (*BH.*) = *Macroplectrum* Pftz.
- Aerating roots**, roots with aerenchyma.
- Aerenchyma**, respiratory tissue formed by the phellogen; *Avicennia*, *Bruguiera*, *Herminiera*, *Jussieuia*, *Neptunia*, *Rumex*, *Sesbania*, *Sonneratia*, *Taxodium*, *Terminalia*.
- Aeria** O. F. Cook. Palmae (IV. 1). 1 Porto Rico.
- Aerial roots**, adventitious roots arising above ground, often forming buttresses (Palmae, Pandanaceae), pillars (Araceae, *Ficus*), clasping

and climbing organs (Araceae, Hedera, Orchidaceae, Tecoma), water-absorbing organs (Orchidaceae, Velloziaceae), assimilating organs (Orchidaceae, Podostemaceae), thorns (Acanthorhiza), parasitic suckers (Cuscuta, Viscum), &c.

Aerides Lour. Orchidaceae (II. 20). 20 E. As. Leaves fleshy.

Aerophytes, epiphytes.

Aerotropism, influence of gases on growth and curvature.

Aeruginous, verdigris-coloured.

Aerva Forsk. Amarantaceae (2). 12 trop. As., Afr.

Aesandra Pierre (*Payena* A. DC. p.p. *EP.*). Sapotaceae (1). 1 trop. As.

Aeschynanthus Jack. (*Trichosporum* D. Don.) Gesneraceae (1). 75 Indomal., China. Many epiphytes with fleshy leaves. Extreme protandry with movement of sta. Seeds with long hairs.

Aeschynomene L. (incl. *Herminiera* Guill. et Perr. *EP.*). Legum. (III. 7). 70 warm. From the pith-like wood of *A. aspera* L. (shola, pith-plant) the solar helmets of trop. As. are made.

Aesculus L. (incl. *Pavia* Boerh.). Hippocastanaceae (Sapind. *BH.*). 20 N. temp., S. Am. *A. Hippocastanum* L. (horse-chestnut) and several of § *Pavia* orn. trees. *A. ohioensis* Michx. (*glabra* Willd.) buckeye (U.S.). Trees with large winter buds, covered with resinous scale l., containing next year's shoot and infl. very advanced. The bud expands rapidly in spring. In *A. parviflora* Walt. transitions from scale to perfect l. may be seen, showing the former to = leaf bases. L. opp., exstip., palmate; the blades when young are hairy and hang downwards. Owing to different lengths of stalk, &c., the l., looked at from above, form a very good *mosaic*, and are all equally exposed to light. Infl. mixed, the primary structure racemose, the lat. branches cymose (cincinnati). Upper fls. ♂ with rudimentary ovary, and open first. ♀ fls. protog. The chief visitors are bees. On the C are yellow spots, which later on turn red (*cf.* *Fumaria*, *Diervilla*, &c.). K (5); C 5 or 4 zygomorphic; A 8—5 introrse; disc extrastaminal, often one-sided; G (3), 3-loc., with 2 ov. in each loc. Fr. a leathery caps., usu. 1-seeded, 3-valved; seed large, exalb. (*cf.* this fr. with *Castanea*).

Aestivalis (Lat.), of summer.

Aestivation, arrangement of perianth l. in the bud. L. or segments not even meeting at edges, the a. is *open* (C of Cruciferae, see floral diagrams), touching but not overlapping, *valvate* (C of Compositae), overlapping, *imbricate* (K of Leguminosae). Special cases of imbr. are *convolute* or *contorted* (each l. overlapping with the same right or left edge, so that the C looks twisted, as in Ericaceae) and *quincuncial* (two l. overlapping with both edges, two underlapping with both, one over- and under-lapping, as in K of Caryophyllaceae). Each l. overlapping the one post. to it, *ascending* (K of *Vicia* in Leguminosae), ant. to it, *descending* (C of *Vicia*). L. margins turned inwards, *induplicate* (C of many Compositae), outwards, *reduplicate*. L. rolled up inwards like watch springs, *circinate* (petals of Hamamelidaceae).

Aetaerio, Etaerio.

Aethanthus Engl. Loranthaceae (1). 10 N. Andes.

Aetheilema R. Br. = *Phayloopsis* Willd. (Acanth.)

- Aethionema** R.Br. (incl. *Eunomia* DC.). Cruciferae (2). 55 Medit. Fr. lomentose in some; in others, e.g. *A. heterocarpum* J. Gay, there are two kinds of fr., one many-seeded and dehiscent, the other one-seeded indehiscent. (Solms in *Bot. Zeit.* 1901, p. 61.)
- Aethusa** L. Umbelliferae (III. 5). 1 Eur. (incl. Brit.), *A. Cynapium* L. (fool's parsley), a poisonous weed resembling parsley.
- Aextoxicon** Ruiz et Pav. Euphorbiaceae (A. I. 1). 1 Chili.
- Affinity**, degree of resemblance and relationship.
- Affixed**, fixed upon.
- Affonsea** A. St. Hil. Leguminosae (I. 1). 3 Brazil.
- Afrazelia** Pierre (*Afzelia* Sm. p.p. *EP.*). Leguminosae (II. 3). 5 trop. Afr.
- Aframomum** K. Schum. (*Amomum* L. p.p. Auct.). Zingiber. (I). 40 trop. Afr.
- Afrardisia** Mez. (*Ardisia* Sw. p.p.). Myrsinaceae (II. 2). 10 trop. Afr.
- African corn-lily**, *Ixia*; **lily**, *Agapanthus umbellatus* L'Hérit.; **mari-gold**, *Tagetes*; **oak**, *Lophira*, *Oldfieldia*; **rubber**, *Landolphia*; **violet**, *Saintpaulia ionantha* H. Wendl.
- Afridia** Duthie (*Nepeta* Riv. p.p.). Labiatae (VI). 1 Afghanistan.
- Afrocalathea** K. Schum. (*Calathea* G. F. W. Mey p.p.). Marant. 1 W. Afr.
- Afrodaphne** Stapf. (*Beilschmiedea* Nees p.p.). Lauraceae (II). 20 trop. Afr.
- Afrofittonia** Lindau. Acanthaceae (IV. B). 1 W. trop. Afr.
- Afrohamelia** Wernham. Rubiaceae (I. 7). 1 Nigeria.
- Afromendonia** Gilg. Acanthaceae (II). 4 trop. Afr.
- Afrorhaphidophora** Engl. Araceae (II). 2 trop. W. Afr.
- Afrormosia** Harms (*Ormoseia* Jacks. p.p.). Leguminosae (III. 1). 2 trop. Afr.
- Afrosison** H. Wolff. Umbelliferae (III. 4). 1 trop. Afr.
- Afrostyrax** Perkins et Gilg. Styraceae. 1 trop. Afr.
- Afrothismia** Schlechter (*Thismia* Griff. p.p.). Burmann. 1 trop. Afr.
- Afzelia** Sm. (*Intsia* Thou.). Legumin. (II. 3). 8 trop. As., Afr.
- Afzeliella** Gilg. (*Guyonia* Naud. p.p.). Melastomaceae (I). 1 Sierra Leone.
- Agad** (Cl.), a beach plant; **agium** a beach formation.
- Agallis** Phil. Cruciferae (inc. sed.). 1 Chili.
- Agalma** Miq. = *Heptapleurum* Gaertn. (*BH.*) = *Schefflera* Forst. (Aral.).
- Agalmyna** Blume. Gesneriaceae (I). 3 Java, Sumatra.
- Agamogenesis**, asexual reproduction by buds.
- Aganippea** Moç. et Sesse. Compositae (5). 2 Mex.
- Aganisia** Lindl. Orchidaceae (II. 13). 4 trop. Am. W.I. Cult.
- Aganonerion** Pierre. Apocynaceae (II. 2). 1 Indochina.
- Aganosma** G. Don (*Ichnocarpus* R. Br. *BH.*). Apocyn. (II. 1). 4 Ind. to Phil. Is.
- Agapanthus** L'Hérit. Liliaceae (IV). 5 S. Afr. *A. umbellatus* L'Hérit. (African lily) in gardens. Umbel cymose. Seeds winged.
- Agapetes** G. Don (incl. *Paphia* Seem. *BH.*). Ericaceae (III. 2) (*Vaccin. BH.*). 35 E. As., Austr., Fiji.
- Agarista** D. Don (*Leucothoe* Don p.p. *EP.*). Eric. (II. 4). 25 S. Am.
- Agastache** Clayt. ex Gronov., O. Ktze (*Lophanthus* Benth. p.p. *BH.*). Labiatae (VI). 5 N. Am.

- Agastachys** R. Br. Proteaceae (1). 1 Tasmania.
- Agasyllis** Spreng. (*Siler* Scop. p.p. *BH.*). Umbellif. (III. 6). 2 E. Medit.
- Agatea** A. Gray (*Agation* Brongn. *BH.*). Violaceae. 3 Fiji, New Cal.
- Agathaea** Cass. = *Felicia* Cass. p.p. (Compos.).
- Agathelpis** Choisy. Scrophulariaceae (II. 7). [*Selagin*. *BH.*] 6 S. Afr.
- Agathis** Salisb. (*Dammara* Lam.). Coniferae (Pinaceae 1; see C. for gen. char.). 4 Malaya to N.Z. Evergr. dioec. trees; the fr. takes two years to ripen. Several give copals or animes, used for varnish, &c. *A. Dammara* Rich. (*D. orientalis* Lamb., Malay and Phil. Is.), Manila copal. *A. australis* Steud. (Austr., N.Z., Kauri or Cowrie pine), kauri-copal; the best pieces are dug out of the soil, often far from trees now living. (Wiesner, *Die Rohstoffe*, 2nd ed. pp. 253, 264.)
- Agathophora** Bunge (*Halogeton* p.p. *BH.*). Chenopod. (B). 1 N. Afr., Arabia.
- Agathophyllum** Juss. = *Ravensara* Sonner. (Laurac.).
- Agathosma** Willd. Rutaceae (1). 100 S. Afr. Cult. orn. fl.
- Agati** Adans. = *Sesbania* Scop. p.p. (Legum.).
- Agation** Brongn. (*Agatea* A. Gray, *EP.*). Violaceae. 3 Fiji, New Cal.
- Agauria** Hook. f. Ericaceae (II). 5 trop. Afr., Madag.
- Agave** L. Amaryllidaceae (II). 100 trop. Am. and S.U.S., incl. *A. americana* Linn. (Century plant, Maguey, American aloe). The short stem grows in thickness like *Yucca*, bearing a rosette of large fleshy l. coated with wax; only 2 or 3 l. form in a year. During 5 to 60 or perhaps 100 years (hence the name), depending on climate, richness of soil, &c., the plant is veg., and stores up in the l. an enormous mass of reserves. At length it flowers, a gigantic term. infl. coming rapidly out, sometimes reaching 20 feet, and bearing many fls. When the fr. is ripe the pl. dies. Veg. repr. in two ways—by suckers from base of stem, and by formation of bulbils in place of many fls.
- The rush of sap to so large and so rapidly developed an infl. is very great; the Mexicans cut off the young fl. head and collect the sap. As much as 1000 litres are said to be given by one plant. The fermented juice (pulque) is a national drink; from it they distil a spirit called mescal (*cf.* Cocos). Many yield useful fibres. The best are sisal hemp and henequen, given by *A. sisalana* Perrine, and *A. fourcroydes* Lem., cultivated in Yucatan, the Bahamas, India, &c. Others yield fibres variously known as pita, istle, ixtle, lechuguilla, keratto, &c. See *Rep. Miss. Bot. Gdn.* 1896, p. 47; *Kew Bull.* 1892, p. 21, *Tropenpfl.* 1899, p. 337; Dodge, *Useful Fiber Plants* (Bull. U.S. Dpt. Agr.), &c.
- Agdestis** Moç. et Sesse. Phytolaccaceae. 1 Mexico, Guatemala.
- Agelaea** Soland. Connaraceae. 20 palaeotrop.
- Agents**, effecting seed-dispersal, see Seed-dispersal; effecting pollination, see Pollination, &c.
- Ageratella** A. Gray. Compositae (2). 2 Mex.
- Ageratina** O. Hoffm. Compositae (1). 2 trop. Afr.
- Ageratum** L. Compositae (2). 40 trop. all but one Amer. *A. conyzoides* L. (goatweed), the commonest weed in Ceylon.
- Agglomerate**, collected into a head.
- Agglutinate**, glued together.

- Aggregatae** (Warming). The 10th cohort of Sympetalae.
- Aggregate** (fruit), many similar fruits from one fl., *Anona*, *Fragaria*, *Illicium*, *Liriodendron*, *Magnolia*, *Phytolacca*, *Rosaceae*, *Rubus*, *Unona*.
- Aggregation** (Cl.), coming together of plants into groups.
- Agriabampoa** Rose. Compositae (5). 1 Mex.
- Agialida** O. Kuntze = *Balanites* Delile (Zygophyll.).
- Agianthus** Greene. Cruciferae (1). 2 N. Am.
- Agiella** Van Tiegh. Zygophyllaceae. 2 trop. Afr.
- Aglaiia** Lour. Meliaceae (III). 100 Indomal., China.
- Aglaodorum** Schott (*Aglaonema* p.p. *BH.*). Araceae (v). 1 Sumatra, Borneo.
- Aglaonema** Schott. Araceae (v). 15 E. Ind. There are several infl. forming a sympodium. Fl. monœcious, naked.
- Aglossorhyncha** Schlecht. Orchidaceae (II. 5). 2 New Guinea.
- Agonandra** Miers. Opiliaceae [*Ola*cin. *BH.*]. 1 E. trop. Brazil.
- Agonis** Lindl. Myrtaceae (II. 1). 13 Austr. (willow-myrtle).
- Agoseris** Raf. = *Troximon* Nutt. (Compos.). 40 Am.
- Agrad** (Cl.), a cultivated plant; **agrium**, a culture formation.
- Agrestis** (Lat.), **Agrestal**, growing in fields.
- Agrianthus** Mart. Compositae (2). 3 Brazil.
- Agriemonia** Tourn. ex L. Rosaceae (III. 5). 10 N. temp. *A. Eupatoria* Linn. and *A. odorata* Mill. (agrimony) in Brit. The receptacle encloses the two achenes in fr., and is covered with hooks.
- Agrimony**, *Agrimonion*; **hemp-**, *Eupatorium cannabinum* L.
- Agriophyllum** Bieb. Chenopodiaceae (A). 5 Centr. Asia.
- Agronomy**, agriculture of field crops and cultivation.
- Agropyron** J. Gaertn. Gramineae (12). 45 temp. *A. caninum* Beauv. (wheat-grass) and *A. repens* Beauv. (twitch or couch-grass) in Brit., the latter a troublesome weed. Its long rhizome roots at the nodes, and if broken up each node gives a new plant.
- Agrostemma** L. (*Lychnis* L. p.p. *BH.*). Caryophyll. (II. 1). 2 Medit.
- Agrostis** L. Gramineae (8). 125 cosmop., chiefly N. temp., 4 in Brit. incl. *A. alba* L., white Bent or florin grass (valuable pasture).
- Agrostistachys** Dalz. (incl. *Sarcoclinium* Wight). Euphorb. (A. II. 2). 11 Indomal., trop. Afr.
- Agrostocrinum** F. Muell. Liliaceae (III). 1 SW. Austr.
- Agrostology**, study of grasses.
- Agrostophyllum** Blume. Orchidaceae (II and III). 20 Indomal.
- Aguacate**, avocado, *Persea gratissima* Gaertn. f.
- Agyneia** L. Euphorbiaceae (A. I. 1). 2 Indomal., Masc.
- Ahernia** Merrill. Flacourtiaceae (2). 1 Phil. Is.
- Ai-camphor**, *Blumea balsamifera* DC.
- Aichryson** Webb. et Berth. = *Sempervivum* L. p.p. (Crassul.).
- Aidia** Lour. Inc. sed. 1 Cochinchina.
- Ailanthus** Desf. Simarubaceae. 8 As., Austr. *A. glandulosa* Desf. (tree of heaven) in parks. Absciss layers form at base of the leaflets as well as of the petiole; the leaflets usually drop first.
- Aimorra** Raf. Compositae (inc. sed.). 1 N. Am.
- Ainsliaea** DC. Compositae (12). 30 India to Japan.
- Ainsworthia** Boiss. = *Tordylium* L. p.p. (Umbell.).

- Ailolotheca** DC. Compositae (5). 1 Mex.
- Alouea** Aubl. Lauraceae (11). 20 trop. Am., W.I.
- Aiphanes** Willd. = *Martinezia* Ruiz et Pav. (Palmae).
- Aiphytium**, an ultimate formation.
- Aira** L. p.p. Gramin. (9). 12 N. palaeotemp., 2 Brit. (hair-grass).
A. caespitosa L. and *A. flexuosa* L. = *Deschampsia*; *A. canescens* L. = *Corynephorus*. *A. elegans* Gaudich., cult. orn.
- Airopsis** Desv. Gramineae (9). 1 S. Eur., NW. Afr.
- Airosperma** Lauterb. et K. Schum. Rubiaceae (11. 1). 2 New Guinea.
- Air-plants**, epiphytes.
- Airspaces**, intercellular spaces, or spaces enclosed in folded leaves.
- Aitchisonia** Hemsl. Rubiaceae (11. 6). 1 Afghanistan.
- Aitonia** Thunb. (*Nymania*, EP.). Meliac. (111) formerly Sapind. 1 S. Afr.
- Aizoaceae** (EP.; *Ficoideae* BH). Dicots. (Archichl. Centrospermae).
 20 gen., 650 sp. chiefly S. Afr., but also in Calif., S. Am., trop. Afr. and As., Austr. Nearly allied to the other Centrospermae, but placed in various other relationships by different authors, e.g. near Cactaceae by B. and H., a relationship which is certainly very close and to which Engler agrees. Xero. herbs or undershrubs with opp. or alt. exstip. l., often fleshy, and with cymes of fls. Anatomy of interest (see *Nat. Pl.*). Formula $P\ 4-5$ or $(4-5)$ (odd leaf, if 5, post.); $A\ 5$ or 3 or ∞ ; $\underline{G}$ or $\overline{G}$ (3) or (∞) , 3-loc. with ∞ ov. in each loc. Dédoublement is very common in the androeceum, and in these cases, e.g. *Mesembryanthemum*, the outer sta. are frequently represented by petaloid stds. Ovary usu. sup. with axile plac., but in *Mesembryanthemum* inf., multiloc. with parietal plac., a very unusual feature brought about during development (see M.). Fr. usu. a caps.; seed with embryo curved round perisperm.
- Classification and chief genera* (after Pax):
- I. **MOLLUGINOIDEAE** (perianth deeply 5-lobed: "petals" or not: ov. sup.): Mollugo.
 - II. **FICOIDEAE** (perianth tubular): ($\underline{G}$) *Sesuvium*, *Trianthema*, *Aizoon*; ($\overline{G}$) *Tetragonia*, *Mesembryanthemum*.
- Aizoon** L. Aizoac. (11). 2 Afr., Medit., Austr. $A\ \infty$ in bundles.
- Ajax** Salisb. = *Narcissus* L. p.p. (Amaryllid.).
- Ajowan**, *Carum copticum* Benth. et Hook. f.
- Ajuga** L. Labiatae (1. 1). 30 palaeotemp.; 3 in Brit., incl. *A. reptans* L. (bugle) and *A. Chamaepitys* Schreb. (yellow bugle, ground-pine). The corolla has no upper lip. Veg. repr. by runners.
- Akania** Hook. f. Akaniaceae. 1 E. Austr.
- Akaniaceae** (EP., *Sapind.* p.p. BH). Dicots. (Archichl. Sapindales).
 1 gen. *Akania* (q.v.). Tree with alt. imparipinnate l. and paniculate infl.; fl. $\delta\ \oplus$; $K\ 5$, $C\ 5$ contorted, no disc; A usu. 8, the 5 external opp. sepals, $\underline{G}$ 3-loc. with 2 anat. pend. ov. in each. Loculic. caps.; fleshy endosp.; straight embryo.
- Akebia** Decne. Lardizabalaceae. 3 China, Japan. *A. quinata* Decne. often cult.; fls. monoecious, the lower usually δ ; the δ much larger than the δ (very unusual). The berries dehisce like follicles. Fr. ed.
- Akee**, *Blighia sapida* Kon.
- Akene**, achene.
- Alabastrum** (Lat.), flower-bud.

- Alae**, wings, *Leguminosae*, *Polygalaceae*.
- Alafia** Thou. *Apocynaceae* (II. 1). 12 trop. Afr., Madag.
- Alamania** La Llave et Lex. (*Epidendrum* L. p.p. *EP.*). *Orchid.* (II. 6). 1 Mex.
- Alangiaceae** (*EP.*; *Cornaceae* p.p. *BH.*). *Dicots.* (*Archichl. Myrtiflorae*). Only genus *Alangium* (*q.v.*).
- Alangium** Lam. *Alangiaceae*. 22 palaeotrop. Trees or shrubs with cymose infl. of heteroöchl., usu. ♂ fls. K and C 4—10, A 4—10 or 8—20, or more, $\bar{G}$ 1-2-3-loc. with 1 pend. ov. in each. 1-seeded drupe. Endosp.
- Alania** Endl. *Liliaceae* (III). 1 Austr., in Blue Mts.
- Alaternus** (Tourn.) Mill. = *Rhamnus* L. p.p. (*Rhamn.*).
- Albersia** Kunth. = *Amaranthus* L. p.p. (*Amarant.*).
- Alberta** E. Mey (*Ernestimeyera* O. Kuntze). *Rubiaceae* (II. 1). 3 Madag., S. Afr.
- Albertia** Regel et Schmalh. *Umbelliferae* (III. 4). 3 Turkestan.
- Albertinia** Spreng. *Compositae* (1). 1 Brazil.
- Albertisia** Becc. *Menispermaceae*. 1 New Guinea.
- Albidus** (Lat.), whitish.
- Albinism**, disease from absence of normal colour; **albino**, plant with a.
- Albizzia** Durazz. *Leguminosae* (I. 1). 50 warm |* *A. Lebbek* Benth. (siris, E. Indian walnut) &c. good timber. *A. stipulata* Boiv. (sau), *A. moluccana* Miq. &c. as shade for tea cult. &c. (very rapid growth, about 10 ft. in height, and 1 ft. in girth, a year).
- Albuca** L. *Liliaceae* (v). 30 Afr. Outer sta. often stds. Cult. orn.
- Albumen** (-inous), the endosperm of a seed; **albuminoids**, proteids.
- Alburnum**, sap-wood, recently formed wood.
- Albus** (Lat.), white.
- Alcamaspinosa** Nor. Inc. sed. Nomen.
- Alcantara** Glaziov. *Compositae*. Nomen. 2 Brazil.
- Alcea** (Tourn.) L. = *Althaea* Tourn. (*Malv.*)
- Alchemilla** L. *Rosaceae* (III. 5). 40 temp., and trop. Mts. *A. arvensis* Scop. (parsley piert), *A. vulgaris* L. (lady's mantle), and *A. alpina* L. Brit. Fl. Inconspic., apert., with epicalyx; A 2 or 4, $\bar{G}$ 1—4 each with 1 ov. Achenes enclosed in dry receptacle. Some are parthenogenetic; some show a kind of chalazogamy; some have an exudation of water from the l.
- Alchornea** Sw. *Euphorbiaceae* (A. II. 2). 30 trop. Only the ♀ of *A. (Coelebogyne) ilicifolia* Muell.-Arg. is cult., but produces good seed. Adv. embryos form by budding of the nucellus round the embryo-sac (cf. *Funkia*).
- Alchorneopsis** Muell.-Arg. *Euphorbiaceae* (A. II. 2). 2 S. Am.
- Alciope** DC. *Compositae* (8). 2 S. Afr.
- Alcoceratothrix** Niedenzu. *Malpighiaceae* (II). 2 Brazil, Guiana.
- Alcoceria** Fernald. *Euphorbiaceae* (A. II. 7). 1 Mex.
- Alcohol** (ethyl, the stimulant in drinks) is obtained usu. from sugar, either stored as such in the pl., or obtained by fermentation, whether natural as in the expansion of an infl., or artificial. The chief sources are the fr. of *Vitis* (grape), tubers of potato and beet, grain of barley, rye, maize, rice, &c., stem of sugarcane, and young infl. of *Agave*, *Arenga*, *Borassus*, *Caryota*, *Cocos*, &c. Cf. also *Bassia*, *Ceratonia*,

- Eleusine*, *Ipomoea*, *Manihot*, *Musa*, *Nipa*, *Phoenix*, *Sorghum*. Methyl or wood alcohol, for burning, is obtained from hard wood, esp. beech, oak, thorn, and wattle, by distillation. See Kew Bull. 1912, p. 113.
- Aldenella** Greene (*Polanisia* Raf. p.p. *EP.*). Capparid. (v). 1 N. Am.
- Alder**, *Alnus glutinosa* Medic.; -**buckthorn**, *Rhamnus Frangula* L.; **West Indian**-, *Conocarpus erectus* L.
- Aldina** Endl. Leguminosae (II. 9). 5 Guiana, N. Brazil.
- Aldrovanda** Monti. Drosera. 1 Eur. to Austr., *A. vesiculosa* L., a rootless swimming pl. with whorls of l. Each has a stalk portion, and a blade like *Dionaea*, working in the same way, capturing and digesting small animals. Winter buds form in cold climates.
- Alectoronotum** Schlecht. = *Euphorbia* L. p.p. (Euphorb.).
- Alectorolophus** Hall. = *Rhinanthus* L. p.p. (Scrophular.).
- Alectorurus** Makino (*Anthericum* L. p.p.). Liliaceae (III). 1 Japan.
- Electra** Thunb. (*Melasma* Berg. p.p.). Scrophular. (III. 2). 20 trop. exc. Austr.
- Electryon** Gaertn. Sapindaceae (I). 15 Malaya, Polynesia.
- Alehoof**, *Nepeta Glechoma* Benth.
- Alepidea** La Roche. Umbelliferae (II. 1). 5 S. and trop. Afr.
- Alepyrum** Hieron. (*Gaimardia* Gaudich. *BH.*). 2 N.Z., Tasm. &c.
- Alepyrum** R. Br. = *Centrolepis* Labill. (Centrolepid.).
- Aletes** Coulter et Rose. Umbelliferae (III. 5). 5 N. Am.
- Aletris** L. Liliaceae (IX.) [Haemodor. *BH.*]. 8 E. As., N. Am.
- Aleurites** Forst. Euphorbiaceae (A. II. 3). 5 warm As. Extrafl. nectaries on petiole and at ends of large l.-veins. *A. triloba* Forst. and others cult. for oil from seeds (wood-oil).
- Aleurone**, proteid in seed, usually in form of crystalloids.
- Alexa** Moq. Leguminosae (III. 1). 1 Brit. Guiana.
- Alexanders**, *Smyrniolum Olusatrum* L.
- Alexandra** Bunge. Chenopodiaceae (B). 1 Centr. As.
- Alfa**, esparto, *Stipa tenacissima* L.
- Alfalfa**, lucerne, *Medicago sativa* L.
- Alfilaria**, *Erodium cicutarium* L'Hérit.
- Alfredia** Cass. = *Carduus* L. p.p. (Compos.).
- Algaroba**, *Ceratonia Siliqua* L., *Prosopis alba* Griseb.
- Algernonia** Baill. Euphorbiaceae (A. II. 7). 2 Brazil.
- Alguelaguen** Feuill. = *Sphacele* Benth. (Labiata.).
- Alhagi** Tourn. ex Adans. Leguminosae (III. 7). 3 Medit., W. As. Thorny xero.; the rootstock blows about in the dry season. Honey-like sap exudes in hot weather, drying into brownish lumps (manna).
- Alibertia** A. Rich. Rubiaceae (I. 8). 25 trop. Am.
- Aliciella** Brand. (*Gilia* Ruiz et Pav. p.p.). Polemon. 1 N. Am.
- Alien**, an introduced plant which has become naturalised.
- Algera** Suksdorf. Valerianaceae. 10 Pac. Am.
- Alina** Adans. Inc. sed. Nomen.
- alis** (Lat. suff.), belonging to.
- Alisma** L. (excl. *Caldesia* Parl. *EP.*). Alismaceae. 2 N. temp., Austr. *A. Plantago* L., water-plantain, Brit. Sta. 6 (doubling of outer whorl), coherent at base, forming nectary. *A. natans* L. = *Elisma* n.
- Alismaceae** (*Alismataceae* *EP.*, *BH.* incl. *Butomaceae*). Monocots.

(Helobiae). 11 gen., 75 sp. cosmop. Water or marsh herbs with perenn. rhiz. L. rad., erect, floating or submerged, exhibiting corresponding structure (cf. *Sagittaria*). Small scales in axils. Latex. Infl. usu. much branched, primary branching racemose, secondary often cymose. Fl. ♂ or unisex., reg. K 3, C 3, A 6—∞, with extrorse anthers, G 6—∞, with 1 (rarely 2 or more) anatrop. ov. in each. Group of achenes. Exalb. Embryo horse-shoe shaped. *Chief genera*: *Alisma*, *Elisma*, *Echinodorus*, *Sagittaria*. [BH. chars. add: l. various, anthers also introrse, ovules also ∞ scattered over surface of cpls., embryo also straight.]

Alismorchis Thou. = *Calanthe* R. Br. p.p. (Orchid.).

Alizarin, the dye-stuff of madder, *Rubia tinctorum* L.

Alkali grass, *Distichlis*.

Alkaloids, compounds of C, H, N, with or without O, of alkaline reaction. Many here given are now classed under the more definite title of purine bases. The name often indicates the genus from which they are obtained, e.g. aconitin (*Aconitum*), atropin, brucin (*Strychnos*), caffen or thein (*Coffea*, *Thea*), cinchonidin, cinchonin (*Cinchona*), cocaine (*Erythroxylon*), codeine (in opium), digitalin, hyoscyamin, morphin (in opium, *Papaver*), nicotine, quinine (*Cinchona*), solanine, strophanthin, strychnine, thein (=caffein), theobromin.

Alkanet, alkannin, cf. next.

Alkanna Tausch. Boraginaceae (iv. 3). 35 Medit., S. Eur. The r. of *A. tinctoria* Tausch. gives the red dye alkanet or alkannin.

Alaeanthus Thw. Moraceae (i). 3 Indomal.

Alaeophania Thw. Rubiaceae (ii. 5). 3 Indomal.

Allagopappus Cass. Compositae (4). 1 Canaries.

Allamanda L. Apocynaceae (i. 1). 12 trop. Am., W.I. Seeds hairy.

Allanblackia Oliv. Guttiferae (v). 5 trop. Afr. The seeds of *A. Stuhlmannii* Eng. yield a tallow-like fat.

Allantodia R. Br. = *Athyrium* Roth. (Filicin.)

Allantodioid, applied to ferns resembling *Allantodia*.

Allantoid, sausage-shaped.

Allantoma Miers. Lecythidaceae (Myrtaceae BH.). 12 Guiana, Brazil.

Allardia Decne. (*Waldheimia* EP.). Compositae (7). 8 C. As.

Allasia Lour. Inc. sed. (= *Vitex* Tourn.?). 1 E. Afr.

Allendea La Llave. Compositae (8). 1 Mex.

Allenia Ewart. Euphorbiaceae (B. 1). 1 Austr.

Allexis Pierre. Violaceae. 1 Cameroons.

Allgood, *Chenopodium*.

Allheal, *Valeriana officinalis* L.; **W. Indian-**, *Micromeria obovata* Benth.

Alliaceous, onion-like.

Alliaria Marsh, DC. (*Sisymbrium* BH.). Crucif. (2). 5 Eur. temp., As.

Alligator apple, *Anona palustris* L.; **-pear**, *Persea gratissima* Gaertn. f.; **-wood** (W.I.), *Guarea trichilioides* L.

Allionia L. Nyctaginaceae. 1 N. Am.; **do.** Loeff. (*Mirabilis* L. p.p. EP.). Nyctaginaceae. 20 Am. Anthocarp glandular (cf. *Pisonia*).

Allioniella Rydberg (*Mirabilis* L. p.p. EP.). Nyctagin. 1 N. Am.

Allium (Tourn.) L. Liliaceae (iv). 300 *. *A. ursinum* L. (garlic), *A.*

Schoenoprasum L. (chives), and 6 others, in Brit. *A. Ceba* L. (Persia, &c.) is the onion, *A. Porrum* L. (Eur.) the leek, *A. ascalonicum* L. (Orient) the shallot, *A. sativum* L. (S. Eur.) the garlic. Bulbous herbs with linear (or hollow centric) l. and cymose umbels of fls. Many have collateral buds in the axils. In many the fls. are replaced by bulbils serving for veg. repr. (cf. *Lilium*). In *A. ursinum*, &c. honey is secreted by the septal glands of the ovary; fl. protandr.

Allmania R. Br. Amarantaceae (2). 3 trop. Am.

Allocalyx Cordemoy. Scrophulariaceae (II. 6). 1 Reunion.

Allocarpus H. B. et K. = *Calea* L. p.p. (Compos.).

Allocarpy, fruiting from cross-fertilised fl.; -gamy, cross-fert.

Allocarya Greene (*Eritrichium* BH.). Boragin. (IV. 2). 35 Pac. Am.

Allochrusa Bunge (*Acanthophyllum* C. A. Mey, BH.). Caryophyll. (II. 2). 15 W. and S. As.

Allomorpha Blume. Melastomaceae (I). 15 Malaya, China, Polynesia.

Alloneuron Pilger. Melastomaceae (I). 1 Peru.

Allophylus L. Sapindaceae (I). 100 trop. and subtrop.

Allophyton T. S. Brandege. Scrophulariaceae (III. 3). 1 Mex.

Alloplectus Mart. (*Crantzia* Scop.). Gesner (I). 40 trop. Am.

Alloschemone Schott (*Monstera* Adans. BH.). Araceae (II). 1 Braz.

Allosorus Bernh. = Cryptogramme, Cheilanthes, Pellaea, &c. (Filices.)

Allospondias Stapf. (*Spondias* L. p.p. EP.). Anacard. (2). 1 Indochina.

Alloteropsis C. Presl. (*Panicum* L. p.p. EP.). Gramin. (5). 1 Calif.

Allotropa A. Gray. Pyrolaceae. 1 W. As.

Allotropous (insects), short-tongued.

Allseed, *Polycarpon*, *Radiola*.

Allspice, *Pimenta officinalis*; **Carolina-**, *Calycanthus floridus*.

Alluandia Drake (*Didierea* Baill. p.p. EP.). Didieraceae. 4 Madag.

Almeidea St Hil. Rutaceae (I). 5 Brazil.

Almeloveenia Dennst. Inc. sed. 1 Indomal.

Almond, *Prunus Amygdalus* Stokes; **country-**, *Terminalia Catappa* L.;

Java-, *Canarium commune*, L.; **-tree** (W.I.), *Terminalia Catappa* L.

Alniphyllum Matsumura. Styraceae. 2 Formosa, SW. China.

Alnus (Tourn.) L. Betulaceae (2). 17 N. temp. and Andes. *A. glutinosa* Medic. (alder), Brit. Cf. *Betula*. In the Stem.

axil of each bract of the ♂ catkin are 3 fl. (see fl. fl. fl. diagram of *Betula*, and cf. other genera) each β' β'

with 4 sta. and 4 perianth l. The bracteoles α β

α , β , β' , β' are present. All these l. are united bract.

with one another. In the ♀ catkin only two, the lat., fl. occur, and the same bracts. After fert., the ov. gives a one-seeded nut, under which is found a 5-lobed scale, the product of subsequent growth of the 5 leaves. The fl. is chalazogamic.

Alocasia Neck. Araceae (VI). 45 E. Ind. Herbaceous; monoec. *A. macrorrhiza* Schott and others are cult. for ed. rhiz. (cf. *Colocasia*).

Alocasiophyllum Engl. (*Cercestis* p.p. EP.). Arac. (IV). 1 W. Afr.

Aloe Tourn. ex L. Liliaceae (III). 180 S. Afr., esp. the Karroo desert. Usu. shrubby or arborescent xero., growing in thickness and branching. L. in dense rosettes at ends of branches, very fleshy, with thick epidermis, often waxy, and stomata in pits. They are cut across and the juice evap. to obtain the drug aloes.

- Aloes**, *Aloe*; **aloe-wood**, *Cordia Sebestena* L.; **aloes-wood**, *Aquilaria Agallocha* Roxb.
- Aloides** Boerh. ex L. = *Stratiotes* L. (Hydrocharit.).
- Aloitis** Raf. (*Gentiana* Tourn. p.p.). *Gentian.* (I). 4 W. and C. N. Am.
- Alomia** H. B. et K. *Compositae* (2). 10 trop. Am., Chili.
- Alona** Lindl. *Nolanaceae* (Convolv. *BH.*). 15 Chili.
- Alonsoa** Ruiz et Pav. *Scrophulariaceae* (II. 1). 6 trop. Am.
- Alopecurus** L. *Gramineae* (8). 25 temp. Eurasia. 4 Brit. incl.
A. pratensis L., foxtail, cult. for pasture. Fl. protog.
- Alopha** Herb. (*Herbertia* *BH.*). *Irid.* (II). 7 warm Am. Cult. orn. fl.
- Aloysia** Ort. et Palau ex L'Hérit. = *Lippia* L. p.p. (*Verben.*).
- Alpestris** (Lat.), growing at high levels, below the tree line.
- Alphandia** Baill. *Euphorbiaceae* (A. II. 5). 2 New Cal.
- Alphitonia** Reissek. *Rhamnaceae*. 5 Austr., Malaya, Polynesia.
- Alphonsea** Hook. f. et Thoms. *Anonaceae* (I). 12 trop. As.
- Alphonseopsis** E. G. Baker. *Anonaceae* (I). 1 Nigeria.
- Alpine**, at high levels, above the tree line; = **rosa**, *Rhododendron*.
- Alpinia** L. *Zingiberaceae* (I). 140 warm As., Polynesia. K small tubular, C with short tube and 3 large teeth, big labellum; lat. stds. much reduced or absent; anther lobes divided by broad connective.
A. officinarum Hance (China) gives rhizoma galangae.
- Alsad** (Cl.), a grove plant; **alsium**, a grove formation.
- Alseis** Schott. *Rubiaceae* (I. 5). 4 trop. Am.
- Alseodaphne** Nees (*Persea* p.p. *EP.*). *Lauraceae* (I). 10 Indomal.
- Alseuosmia** A. Cunn. *Caprifoliaceae*. 5 N.Z.
- Alsike**, *Trifolium hybridum* L.
- Alsinastrum** Schur. = *Elatine* L. (*Elatin.*).
- Alsine** Scop. (*Arenaria* L. *BH.*). *Caryophyll.* (I. 1). 60 *, Chili.
- Alsinodendron** H. Mann. *Caryophyllaceae* (I. 1). 1 Sandwich Is.
- Alsinopsis** Small (*Arenaria* L. p.p.). *Caryophyllaceae* (I. 1). 10 N. Am.
- Alsocydia** Mart. = *Bignonia* L., *Lundia* DC., &c. (*Bignon.*).
- Alsodeia** Thou. (*Rinorea* Aubl.). *Violaceae*. 80 trop., sub-trop.
- Alsodeiidium** Engl. = *Alsodeiopsis* Oliv.
- Alsodeiopsis** Oliv. *Icacinaceae* (*Olacin.* *BH.*). 7 trop. Afr.
- Alsomitra** M. Roem. *Cucurbitaceae* (I). 10 palaeotrop.
- Alsophila** R. Br. *Cyatheaceae*. 180 trop. Large tree ferns with naked sori (the only gen. of C. without indusium). The stems yield a sago.
- Alstonia** R. Br. *Apocyn.* (I. 3). 30 Indomal. L. whorled. Bark tonic.
- Aistroemeria** L. *Amaryllidaceae* (III). 50 S. Am. L. twisted at base so that true upper surface faces down (internal anatomy also reversed). Caps. splits explosively. Cult. orn. fl.
- Altamiranoa** Rose (*Cotyledon* Tourn. p.p. *EP.*). *Crassul.* 12 Mex.
- Altensteinia** H. B. et K. *Orchidaceae* (II. 3). 12 Andes.
- Alternanthera** Forsk. (excl. *Mogiphanes* Mart. *BH.*). *Amarantaceae* (3). 70 trop., sub-trop. Cult. orn. l.
- Alternate** (l.), one at a node.
- Alternation of Generations**, cf. *Pteridophyta*.
- Althaea** (Tourn.) L. *Malvaceae* (2). 15 temp. | *, 2 Brit. incl. *A. officinalis* L., marsh-mallow; *A. rosea* Cav., hollyhock, cult. orn. fl.
- Althenia** Petit. *Potamogeton.* (*Naiad.* *BH.*). 2 W. Medit., 5 Austr. (*Lepilaena* J. Drumm.).

Althoffia K. Schum. Tiliaceae. 3 New Guinea and Timor.

Altingia Nor. Hamamelidaceae. 2 China to Java. *A. excelsa* Nor., rasamala, one of the largest trop. trees. ♂ fl. reduced to naked sta. with basifixed anthers dehisc. lat., so that only by comparison with related forms can it be shown that the spike of sta. is really an infl. and not a fl. Timber good.

Alum-root, *Heuchera*.

Alvaradoa Liebm. Simarubaceae. 3 Mex., W.I.

Alveolate, honey-combed.

Alvesia Welw. Labiatae (VII). 1 trop. Afr.

Alvisia Lindl. (*Eria* p.p. *BH.* non Hook. f.). Orchid. (II. 15). 1 Ceylon.

Alvordia T. S. Brandege. Compositae (5). 2 Calif., Mex.

Alysicarpus Neck. (*Fabricia* Scop.). Leguminosae (III. 7). 16 trop.

Alyssopsis Boiss. Cruciferae (4). 2 Persia.

Alyssum Tourn. ex L. (incl. *Berteroa* DC., *Schivereckia* Andr. *BH.*). Cruciferae (4). 100 Medit., Eur. Cult. perf. fl.

Alyxia Banks. (*Gynopogon* Forst.). Apocyn. (I. 3). 40 Madag., Indomal.

Alzatea Ruiz et Pav. Celastraceae. 1 Peru.

Amaioua Aubl. Rubiaceae (I. 8). 5 Guiana, Brazil.

Amalocalyx Pierre. Apocynaceae (II. 1). 1 Cochinchina.

Amalophyllon T. S. Brandege. Scrophulariaceae (III. 3). 1 Mex.

Amanoa Aubl. Euphorbiaceae (A. I. 1). 6 trop. Am., Afr., Madag.

Amaraboya Linden ex Mast. (*Blakea* p.p. *EP.*). Melastom. (I). 3 Colo.

Amaracarpus Blume. Rubiaceae (II. 5). 3 Malay Archip.

Amaracus Gled. (*Organum* Tourn. p.p. *BH.*) Labiatae (VI). 13 E. Medit.

Amaralia Welw. (*Sherbournia* G. Don, *BH.*) Rubiaceae (I. 8). 5 trop. Afr.

Amarantaceae (*EP.*, *BH.*). Dicots. (Archichl. Centrospermae.) 40 gen., 500 sp. trop. and temp., usu. herbs or shrubs with opp. or alt. entire exstip. l. Fl. in axillary cymes, the whole infl. being racemose, ♀, rarely unisex., reg. P 4—5 or (4—5), usu. membranous, A 1—5 opp. P, ± united below, G (2—3), 1-loc., with ∞—1 ov. Seed usu. with shiny testa. Embryo curved; endosp.

Classification and chief genera (after Engler):

1. *Celosieae* (ov. > 1, anther 4-loc.): *Celosia*.

2. *Amaranteae* (ov. 1; anther 4-loc.): *Amaranthus*, *Aerva*, *Ptilotus*.

3. *Gomphreneae* (anther 2-loc.): *Gomphrena*, *Alternanthera*, *Iresine*.

Amarantellus Spegazz. Amarantaceae (2). 1 Arg.

Amaranthus L. (incl. *Blitum* L.). Amarantaceae (2). 45 trop. and temp. Cult. orn. fl. (love-lies-bleeding, prince's feather). Infl. of ∞ fl. *A. gangeticus* L., &c., are pot herbs in India, &c.; *A. caudatus* L., *A. paniculatus* L., &c., give ed. grain, used as a cereal in trop. As.

Amarella Gilib., Raf., Griseb. (*Gentiana* L. p.p.). Gent. (I). 15 N. Am.

Amarenum C. Presl = *Trifolium* L. p.p. (Legum.).

Amaroria A. Gray. Simarubaceae. 1 Fiji.

Amarus (Lat.), bitter.

Amarylloidaceae (*EP.*, *BH.* incl. *Velloziac.*) Monocots. (Liliiflorae). 75 gen., 700 sp. mostly trop. or sub-trop. Living in dry climates, they

are usu. xero., many bulbous, leafing only in the rains, some covered with wax (Agave). III have ordinary stems, many have rhiz. Infl. usu. on a scape, with spathe, always cymose, but often umbel- or head-like by condensation. Fl. ♂, reg. or ♀ (transv. so in Anigozanthos). P 3+3 petaloid, A 3+3, G (3), rarely $\frac{1}{2}$ -inf., 3-loc. with axile plac. and ∞ anat. ov. In some (Narcissus and allies) there is a conspic. *corona*, looking like an extra whorl of P, between the normal P and the sta., sometimes looked on as combined ligular outgrowths of the l. of P, sometimes as stipules of sta. (as seen in various stages in the series Caliphruria, Sprekelia, Eucharis, Narcissus). Caps. or berry. Veg. repr. by bulbils common. [BH. chars. (*Amaryllideae*), incl. fl. sol., A ∞ in bundles, placentae lamellate $\pm$ thickened at outer side.]

Classification and chief genera (after Pax):

Anthers introrse.

- I. *AMARYLLIDOIDEAE* (bulbous, scapigerous): Haemanthus, Galanthus, Amaryllis, Crinum, Eucharis, Narcissus.
- II. *AGAVOIDEAE* (rhiz.; l. fleshy, in rosettes): Polianthes, Agave, Furcraea.
- III. *HYPOXIDOIDEAE* (rhiz.; stem with small ordinary l.): Alstroemeria, Bomarea, Anigozanthos.

Anthers extrorse.

- IV. *CAMPYNEMATOIDEAE*: Campynema.

Amaryllis L. (*Belladonna* Sweet). Amaryllidaceae (I). 1 Cape Col. *A. belladonna* L., cult. orn. fl. (the *A.* of greenhouses = *Hippeastrum*).

Amasonia L. f. Verbenaceae (I). 6 Brazil to Trinidad.

Amathad (Cl.), a sandhill pl.; **amathium**, a sandhill formation.

Amauria Benth. Compositae (6). 2 SW.U.S.

Amauriella Rendle. Araceae (IV). 1 Nigeria.

Amauriopsis Rydberg. Compositae (6). 1 U.S.

Ambaiba Barrere ex O. Ktze. = *Cecropia* L. (Moraceae).

Ambelania Aubl. Apocynaceae (I. 1). 6 Brazil to Venezuela.

Amerboa Less., Pers. = *Volutarella* Cass., *Centaurea* L., &c.

Ambiguous, of uncertain origin or doubtful position.

Amblogyna Raf. = *Amaranthus* L. p.p. (Amarant.).

Amblostoma Scheidw. Orchidaceae (II. 6). 3 trop. S. Am.

Amblyanthera Muell.-Arg. = *Mandevilla* Lindl. (Apocyn.).

Amblyanthopsis Mez. (*Ardisia* Sw. p.p.). Myrsin. (II. 1). 2 Indomal.

Amblyanthus A. DC. Myrsinaceae (II. 1). 3 Assam.

Amblygonocarpus Harms. Leguminosae (I. 4). 1 Centr. Afr.

Amblyocalyx Benth. Apocynaceae (I. 3). 2 Borneo.

Amblyocarpum Fisch. et Mey. Compositae (4). 1 near Caspian Sea.

Amblyopappus Hook. et Arn. Compositae (6). 2 Chili.

Amblystigma Benth. Asclepiadaceae (II. 1). 2 Arg., Bolivia.

Ambora Juss. = *Tambourissa* Sonner. (Monim.).

Amborella Baill. Monimiaceae. 1 New Cal.

Amboyna wood, *Pterocarpus indicus* Willd. (?).

Ambrosia L. Compositae (5). 15 Am., Afr. trop. Heads unisex. the ♀ one-flowered. Fr. enclosed in the invol.

Ambrosinia L. Araceae (VII). 1 Medit.

- Ambulia** Lam. (*Limnophila* R. Br., *Terebinthina* Rumph. ex O. Ktze.).
 Scrophulariaceae (II. 6). 30 palaeotrop.
- Amburana** Schwacke et Taub. (*Torresea* Allem. EP.). Legum. (II. 3).
 1 Minas Geraes, Brazil. Good timber.
- Ameghinoa** Spegazz. Compositae (12). 1 Patagonia.
- Amelanchier** Medic. Rosaceae (II). 10 N. temp.
- Ameletia** DC. = *Ammannia* Houst. (BH.) = *Rotala* L. (Lythr.).
- Amellus** L. Compositae (3). 10 S. Afr.
- Amentaceae**, the catkinate families, Salicaceae, Juglandaceae, Betulaceae, Fagaceae; **amentaceous**, catkin-bearing; **amentum**, a catkin.
- American aloe**, *Agave*; **-cowslip**, *Dodecatheon*; **-ebony**, *Brya Ebenus* DC.; **-elemi**, *Bursera gummifera* L.; **-fly-trap**, *Apocynum androsaemifolium* L.; **-laurel**, *Kalmia*; **-mastic**, *Schinus molle* L.; **-water-weed**, *Elodea canadensis* Michx.; **-witch-elder**, *Fothergilla*.
- Amerimnon** P. Br. = *Dalbergia* L. f. (Legum.).
- Amethystea** L. Labiatae (1. 1). 1 Siberia, E. Russia.
- Amherstia** Wall. Leguminosae (II. 3). 1 Burma, *A. nobilis*, Wall., a tree often cult. for its splendid fl. Stalk and br. as well as petals are bright pink. Sta. united in a tube. The young l., covered with brownish spots, hang down "as if poured out"; later they stiffen, turn green and come to the horiz. position (Keeble, *Ann. Bot.* IX. 59).
- Amianthium** A. Gray (*Zygadenus* Michx.). Liliaceae (1). 1 Atl. Am.
- Amicia** H. B. et K. Leguminosae (III. 7), 5 Andes. In *A. Zygomeris* DC. the large stips. protect the bud.
- Ammannia** (Houst.) L. Lythraceae. 20 cosmop.
- Ammi** (Tourn.) L. Umbelliferae (III. 5). 7 Medit., trop. Afr.
- Ammiopsis** Boiss. Umbelliferae (III. 2). 2 NW. Afr.
- Ammobium** R. Br. Compositae (4). 2 New S. Wales. *A. alatum* R. Br. cult. for the fl. heads, dried to form "everlastings."
- Ammobroma** Torr. Lennoaceae. 1 New Mex., Calif.
- Ammocallis** Small = *Vinca* L. (BH.) = *Lochnera* Reichb. (Apocyn.).
- Ammocharis** Herb. Amaryllidaceae (1). 2 S. and trop. Afr.
- Ammochloa** Boiss. Gramineae (10). 2 Medit.
- Ammochthad** (Cl.), a sandbank pl.; **-thium**, a sandbank formation.
- Ammodaucus** Coss. et Dur. (*Daucus* p.p.). Umbellif. (III. 8). 1 Algeria.
- Ammodendron** Fisch. ex DC. Leguminosae (III. 1). 5 W. As.
- Ammodenia** Patrin = *Arenaria* L. p.p. (BH.) = *Alsine* Scop. p.p.
- Ammoniacum**, gum-, *Dorema ammoniacum* D. Don.
- Ammophila** Host. Gramineae (8). 4 N. temp. *A. (Psamma) arundinacea* Host. (marram) common on sandy coasts in Brit., and much used for sand-binding. After some years a light soil forms, in which other pl. take root. The l. curl inwards in dry air.
- Ammoselinum** Torr. et Gray. Umbelliferae (III. 5). 3 N. Am.
- Ammosperma** Hook. f. Cruciferae (2). 2 Medit.
- Ammothamnus** Bunge. Leguminosae (III. 1). 2 W. As.
- Amoenus** (Lat.), sweet, pleasant.
- Amomum** L. Zingiberaceae (2). 150 paleotrop. Fl. usu. on scapes from the rhiz.; wings and keel absent, standard folding round stam. tube at base. Protog. with persistent stigma.
- Amoora** Roxb. Meliaceae (III). 20 Indomal.
- Amoreuxia** Moç. et Sesse. Cochlosperm. (Bixin. BH.). 3 Centr. Am.

- Amoria** C. Presl = *Trifolium* Tourn. p.p. (Legum.).
- Amorpha** L. Leguminosae (III. 6). 15 N. Am. Wings and keel o; standard folds round base of sta.-tube. Protog. with persistent stigma.
- Amorphocalyx** Klotzsch = *Sclerolobium* Vog. p.p. (Legum.). 1 Guiana.
- Amorphophallus** Blume (incl. *Hydrosme*, *Synantherias*, *BH.*). Araceae (IV). 30 trop. As. Usu. corm-like rhiz., giving yearly a big l. (up to 10 ft.) and infl. (in *A. Titanum* Becc. 3 ft. high), with ♂ fl. above and ♀ below. Its dirty red colour and foetid smell attract carrion flies, which sometimes lay eggs on the spadix.
- Amorphospermum** F. Muell. (*Lucuma* p.p. *BH.*). Sapot. (I). 1 trop. E. Austr.
- Amorphous**, shapeless.
- Ampacus** Rumph. ex O. Ktze. = *Evodia* Forst. (Rutac.).
- Ampalis** Boj. Moraceae (I). 2 Madag.
- Ampelanus** Raf. = *Enslenia* Nutt (Asclep.) 3 W. N. Am.
- Ampelidaceae**, **Ampelideae** (*BH.*) = Vitaceae.
- Ampelocera** Klotzsch. Ulmaceae. 2 trop. Am., W. I.
- Ampelocissus** Planch. (*Vitis* L. p.p. *BH.*). Vitaceae. 65 trop.
- Ampelodaphne** Meissn. Lauraceae (II). 5 Brazil, Guiana
- Ampelodesma** Beauv. Gramineae (10). 1 Medit. When young used as fodder. The l. used like esparto (*Stipa*).
- Ampelodonax** Lojac. (*Arundo* Tourn. p.p.). Gramin. (10). 1 Sicily.
- Ampelopsis** (L. C. Rich. in) Michx. p.p. (*Vitis* L. p.p. *BH.*). Vitaceae. 24 temp. and subtrop. As. Am. For garden *A.* cf. *Parthenocissus*.
- Ampelosicyos** Thou. = *Telfairia* Hook. (?) Cucurbitac. 1 Madag.
- Ampelothamnus** Small (*Andromeda* p.p.). Ericaceae (II. 1). 1 Florida.
- Amperea** A. Juss. Euphorbiaceae (B. II). 6 Austr., Tasm.
- Ampherephus** H. B. et K. = *Centratherum* Cass. (Compos.).
- Amphi-** (Gr. pref.), both; **-bious** pl., pl. which can live in water or on land, *Peplis*, *Polygonum*; **-carpic**, with two kinds of fr., *Aethionema*, *Cardamine*, *Dichondra*, *Dimorphotheca*; **-mixis**, sexual repr.; **-tropous** (ovule), turning both ways on stalk.
- Amphiachyris** Nutt. (*Gutierrezia* Benth. p.p.). Comp. (3). 2 Calif.
- Amphianthus** Torr. Scrophulariaceae (II. 6). 1 Georgia.
- Amphibecis** Schrank = *Centratherum* Cass. (Comp.).
- Amphiblemma** Naud. Melastomaceae (I). 5 trop. W. Afr. Cult. orn.
- Amphiblestra** Presl. Polypodiaceae. 1 Venezuela.
- Amphibolis** C. Agardh. (*Cymodocea* Kon. p.p. *EP.*). Potamoget. 1 Austr.
- Amphibromus** Nees. Gramineae (9). 1 Austr.
- Amphicarpaea** Ell. Leguminosae (III. 10). 18 trop. and N. Am., E. As. Some have cleist. fl. below, which give subterranean fr. like *Arachis*.
- Amphicarpum** Kunth (**-on** Raf.). Gramineae (5). 2 S.E. U.S.
- Amphicome** Royle. Bignoniaceae (2). 2 Himal.
- Amphicosmia** Gardn. = *Hemitelia* R. Br. (Cyatheac.).
- Amphidetes** Fourn. Asclepiadaceae (II. 1). 2 Rio de Janeiro.
- Amphidonax** Nees = *Arundo* L. and *Zenkeria* Trin. (Gram.)
- Amphidoxa** DC. Compositae (4). 6 S. and trop. Afr., Madag.
- Amphiestes** Sp. Moore. Acanthaceae (IV. B). 1 Madag.
- Amphigena** Rolfe. Orchidaceae (II. 1). 2 Cape Colony.
- Amphiglossa** DC. Compositae (4). 4 S. Afr.
- Amphilochia** Mart. = *Qualea* Aubl. p.p. (Vochys.).

- Amphilophis** Nash (*Andropogon* L. p.p.). Gramineae (2). 4 U.S.
Amphilophium Kunth. Bignoniaceae (1). 10 warm Am.
Amphimas Pierre. Leguminosae (II. 8). 2 Gaboon.
Amphiodon Huber. Leguminosae (III. 6). 1 Amazon valley.
Amhipogon R. Br. Gramineae (8). 6 Austr.
Amphirhapis DC. = *Inula* L., *Microglossa* DC., *Solidago* L.
Amphirrhex Spreng. Violaceae. 3 trop. Am.
Amphistelma Griseb. = *Vincetoxicum* (BH.) = *Metastelma* (Ascl.).
Amphitecna Miers. Bignoniaceae (4). 2 Mex.
Amphithalea Eckl. et Zeyh. Leguminosae (III. 3). 10 S. Afr.
Amphoranthus Sp. Moore = *Phaeoptilum* Radlk. p.p. (Nyctag.).
Amphorchis Thou. = *Cynorchis* Thou. p.p. (Orchid.).
Amphorella T. S. Brandege. Asclepiad. (II. 1). 1 Mex.
Amphoricarpus Vis. Compositae (II). 2 S.E. Eur.
Amphorocalyx Baker. Melastomaceae (1). 1 Madag.
Amphymentium H. B. et K. = *Pterocarpus* L. p.p. (Legum.). 15 trop. S. Am.
Amplectens (Lat.), embracing; **amplexicaul**, clasping the stem.
Amsinckia Lehm. Boraginaceae (IV. 2). 15 Pac. Am.
Amsonia Walt. Apocynaceae (I. 3). 10 N. Am., Japan.
Amydrium Schott (*Epipremnum* EP.). Arac. (II). 1 Malay Arch.
Amygdalopsis Carr. = *Prunus* Tourn. p.p. (Rosac.).
Amygdalus (Tourn.) L. = *Prunus* Tourn. p.p. (Rosac.).
Amylaceous, starchy; **amyloid**, starch-like.
Amylocarpus Barb. Rodr. (*Bactris* L. p.p.). Palmaceae (IV. 2). 20 Brazil.
Amyris P. Br. Rutaceae (IV) (Burseraceae BH.). 12 trop. Am., W. I.
Anabasis L. Chenopodiaceae (B). 20 Medit., C. As.
Anabata Willd. = *Faramea* Aubl. (Logan.).
Anacampseros L. Portulacaceae. 15 S. Afr. Xero. with fleshy l., and buds protected by bundles of hair, representing stip.
Anacamptis Rich. (*Orchis* p.p. BH.). Orchid. (II. 1). 1 Eur. N. Afr.
Anacampt-orchis × G. Camus, hybrid with *Orchis*. 2 S.W. Eur.
Anacardiaceae (EP.; BH. incl. *Corynocarpaceae*, *Julianiaceae*). Dicots. (Archichl. Sapindales). 60 gen., 500 sp., chiefly trop., but also Medit., E. As., Am. Trees and shrubs with alt. exstip. l., and panicles of ∞ fl. Resin-passages occur, but the l. are not gland-dotted (hence they cannot be confounded with Rutaceae). Recept. convex, flat, or concave; gynophores, etc., occur. Fl. typically 5-merous, reg., hypog. to epig.; A 10-5 or other number; G (3-1) rarely 5, each with 1 anatr. ov., often only one fertile. Usually drupe with resinous mesocarp; embryo curved; no endosperm. The fr. of *Mangifera*, *Anacardium*, *Spondias*, *Pistacia*, &c., are important. *Rhus* furnishes various useful products. [BH. chars. include chars. of *Corynocarpus* and *Julianiaceae*, both rare; fam. in Sapindales.]

Classification and chief genera (after Engler):

- A. 5 free cpls., or 1. L. simple, entire:
 1. *Mangifereae*: *Mangifera*, *Anacardium*.
- B. Cpls. united. L. rarely simple:
 2. *Spondieae* (ovules in each cpl.): *Spondias*.
 3. *Rhoideae* (1 ovule only, ovary free): *Pistacia*, *Rhus*.
 4. *Semecarpeae* (do., ovary sunk in axis): *Semecarpus*.
- C. Cpl. 1. ♀ fl. naked. L. simple, toothed:
 5. *Dobineae*: *Dobinea* (only genus).

- Anacardium** L. Anacardiaceae (1). 8 trop. Am.; *A. occidentale* L. (cashew-nut) largely cult. Fl. polygamous. Each has 1 cpl. yielding a kidney-shaped nut with hard acrid coat. The nut (promotion nut, coffin-nail) is ed. Under it the axis swells up into a pear-like body, fleshy and ed. The stem yields a gum like arabic.
- Anacharis** Rich. = *Elodea* Michx. (Hydrochar.).
- Anacolosia** Blume. Olacaceae (Olacin. *BH.*). 10 Indomal.
- Anacyclus** L. Compositae (7). 15 Medit. Some offic. (radix pyrethri).
- Anadendrum** Schott. Araceae (1). 6 Indomal.
- Anadenia** R. Br. = *Grevillea* R. Br. p.p. (Proteac.).
- Anaectocalyx** Triana. Melastomaceae (1). 2 Venezuela.
- Anagallis** (Tourn.) L. Primulaceae. 18 Eur., As., Afr., S. Am., 2 Brit. (pimpernel). The fl. of *A. arvensis* L. (poor man's weather glass) closes in dull or cold weather.
- Anaglypha** DC. Compositae (4). 2 S. Afr.
- Anagosperra** Wettst. Scrophulariaceae (III. 3). 1 N. Zealand.
- Anagyris** L. Legum. (III. 2). 2 Medit. A. Lour. = *Ormosia* Jacks.
- Analogous** (organs), agreeing in function, but not in descent, mode of origin, nor position; e.g. the r.-like l. of *Salvinia* are analogous to r.
- Anamirta** Colebr. Menispermaceae. 7 Indomal. The achenes of *A. Cocculus* Wight et Arn. (*Cocculus indicus*) are used to adulterate porter. In the angles between the big veins of the l. are little cavities covered by hairs and inhabited by mites (acarodomatia).
- Ananomis** Griseb. = *Eugenia* L. p.p. (Myrt.). 5 W.I.
- Ananas** Tourn. ex L. (*Ananassa* Lindl.). Bromeliaceae (4). 5 trop. Am., incl. *A. sativus* Schult., the pine-apple, largely cult. in Sandw. Is., Singapore, &c. Stem short and leafy, terrestrial, bearing a term. infl., which after fert. forms a common mass, fr. bracts, and axis, while the main axis grows beyond and forms a tuft of l.—the crown of the pineapple. Some vars. cult. orn. l.
- Anandrous**, without sta.
- Ananthacorus** Underw. et Moxon (*Taenitis* p.p.) Polypod. 1 trop. Am.
- Anantherix** Nutt. = *Asclepiodora* A. Gray (*BH.*) = *Asclepias* L. p.p.
- Anapeltis** J. Sm. = *Polypodium* L. (Filic.).
- Anaphalis** DC. Compositae (4). 40 As., Eur., Am. Hairy.
- Anaphrenium** E. Mey. (*Heeria* Meissn. *EP.*). Anacard. (3). 7 Afr.
- Anaphyllum** Schott. Araceae (1v). 2 S. India.
- Anarrhinum** Desf. (*Simbuleta* *EP.*). Scroph. (II. 3). 12 Medit.
- Anarthria** R. Br. Restionaceae. 6 S.W. Austr.
- Anarthrophyllum** Benth. Leguminosae (III. 3). 12 Andes.
- Anartia** Miers (*Tabernaemontana* L. p.p.). Apocyn. (I. 3). 7 trop. Am.
- Anastatica** L. Cruciferae (4). 1 E. Medit., *A. hierochuntina* L. (rose of Jericho). While the seeds are ripening in the dry season the l. fall off and the branches fold inwards, reducing the pl. to a ball of wickerwork, which rolls about with the pods closed until it reaches a wet spot, or the rainy season begins.
- Anastomosis**, reunion of branches.
- Anastrabe** E. Mey. Scrophulariaceae (II. 4). 1 S. Afr.
- Anastraphia** D. Don. Compositae (12). 10 W. Ind.
- Anastrophus** Schlecht. = *Paspalum* L. p.p. (Gram.). 1 U.S.

- Anatherum** Beauv. = *Andropogon* L. p.p. (Gram.).
Anatropanthus Schlecht. Asclepiadaceae (II. 3). 1 Borneo.
Anatropous (ovule), reversed on stalk.
Anaxagorea St. Hil. Anonaceae (I). 15 trop. As., Am.
Anaxeton Gaertn. Compositae (4). 7 S.W. S.Afr.
Ancad, a cañon plant.
Anceps (Lat.), **ancipitous**, two-edged.
Anchietea A. St. Hil. Violaceae. 4 trop. S. Am.
Anchomanes Schott. Araceae (IV). 5 trop. Afr.
Anchonium DC. Cruciferae (4). 3 W. As.
Anchovy pear, *Grias cauliflora* L.
Anchusa L. Boragin. (IV. 3). 45 Eur., N. Afr., W. As. *A. officinalis* L. was formerly offic., and is widely scattered (escape in Brit.).
Ancistranthus Lindau. Acanthaceae (IV. B). 1 Cuba.
Ancistrocarpus Oliv. Tiliaceae. 2 trop. W. Afr.
Ancistrocarya Maxim. Boraginaceae (IV. 4). 1 Japan.
Ancistrochilus Rolfe. Orchidaceae (II. 9). 2 trop. Afr.
Ancistrocladaceae (*EP. Dipterocarpaceae*, p.p. *BH.*). Dicots. (Archichl. Parietales.) Only gen. *Ancistrocladus* (q.v.).
Ancistrocladus Wall. Ancistrocladaceae. 12 palaeotrop. Sympodial lianes, each member ending in a watch-spring tendril. L. alt., lanceolate, entire, with minute stips. Racemose infl. of ♀ reg. fl. K 5, teeth unequal; C (5) slightly united, convolute; A 5 or 10; G 1-loc. with 1 basal erect semi-anatr. ov. Nut. Endosperm.
Ancistrophyllum G. Mann et H. Wendl. Palmae (III). 4 W. Afr.
Ancistrohynchus Finet. Orchidaceae (II. 20). 2 trop. Afr.
Ancistrum Forst. = *Acaena* L. (Rosac.).
Ancrumia Harv. Liliaceae (IV). 1 Chili.
Ancylacanthus Lindau. Acanthaceae (IV. A). 1 New Guinea.
Ancylanthos Desf. Rubiaceae (II. 1). 4 trop. Afr.
Ancylobothrys Pierre (*Landolphia* p.p.). Apocyn. (I. 1). 6 trop. Afr.
Ancylocladus Wall. = *Willughbeia* Roxb. (Apocyn.).
Ancylogyne Nees = *Sanchezia* Ruiz et Pav. (Acanth.).
Andersonia R. Br. (*Sprengelia* p.p. *EP.*). Epacrid. (2). 20 W. Austr.
Andes rose, *Befaria racemosa* Vent. and other spp.
Andira Lam. (*Vouacapoua* Aubl.). Legum. (III. 8). 25 trop. Am., Afr. *A. inermis* H.B. et K. (angelin) is a rain-tree (cf. *Pithecolobium*); its wood (partridge-wood) is useful.
Andiroba, *Carapa* spp.
Andrachne L. Euphorbiaceae (A. I. 1). 15 trop. and sub trop.
Andradaea Allem. Nyctaginaceae (? Phytolac.). 1 Rio de Janeiro.
Andradia T. R. Sim. Leguminosae (II. 9). 1 trop. Afr.
Andrea Mez. Bromeliaceae (4). 1 C. Brazil.
Andreoskia (*Andrzeiowskya*) Reichb. Crucif. (2). 1 E. Medit.
Andriapetalum Pohl = *Panopsis* Salisb. (Proteac.).
Andro- (Gr. pref.), male; **-dioecious**, ♀ and ♂ on separate pl., *Acer*, *Dryas*; **-euceum**, the stamens (q.v.); **-gynous**, monoecious in one infl.; **-monoecious**, ♀ and ♂ on same pl., *Acer*, *Veratrum*; **-phore**, an elongation of the axis between C and A, *Capparidaceae*, *Caryophyllaceae*, *Elaeocarpaceae*, *Passiflora*.
Androcentrum Lem. Acanthaceae (IV. A). 1 Mex.

- Androcephalum** Warb. (*Lunasia* Blanco). Euph. (A. II. 2). 1 N. Guinea.
- Androcera** Nutt. (*Solanum* L. p.p.). Solanaceae (2). 3 N. Am.
- Androchilus** Liebm. (*Liparis* Rich. p.p.). Orchid. (II. 4). 1 Mex.
- Androcymbium** Willd. Liliaceae (1). 20 Medit., S. Afr.
- Andrographis** Wall. Acanthaceae (IV. B). 20 trop. As. (char.).
- Androlepis** Brongn. (*Aechmea* p.p. *BH.*). Bromel. (4). 2 Guatemala.
- Andromachia** Humb. et Bonpl. = *Liabum* Adans. p.p. (Compos.).
- Andromeda** L. Eric. (II. 1). 6 N. temp. and cold, 1 Brit. Cult. orn. fl.
- Andromycia** A. Rich. (*Xanthosoma* Schott p.p.). Arac. (VI). 1 Cuba.
- Andropogon** L. (excl. *Cymbopogon* Spreng., *Vetiveria* Thou., etc.). Gramineae (2). 180 cosmop. The sp. yielding aromatic oils are now chiefly placed in the excluded genera (*q.v.*). *A. odoratus* Lieb. is the ginger grass, from which an oil is prepared. Cf. Stapf in Kew Bull. 1906, p. 297.
- Andropus** Brand. Hydrophyllaceae. 1 New Mexico.
- Androsace** (Tourn.) L. Primulaceae. 80 N. temp. Tufted xerophytes. Often heterostyled like *Primula*. Cult. orn. fl.
- Androsaemum** Tourn. ex Adans. = *Hypericum* L. (Guttif.).
- Androsiphonia** Stapf. Flacourt. (6). (Passifl. *BH.*) 1 trop. Afr.
- Androstachys** Prain. Euphorbiaceae (A. I. 1). 1 trop. Afr.
- Androstephium** Torr. (*Bessera* *EP.*). Liliac. (IV). 3 Mex. — Calif.
- Androtium** Stapf. Anacardiaceae (1). 1 Borneo.
- Androtrichum** Brongn. Cyperaceae (1). 1 E. temp. S. Am.
- Andruris** Schlechter. Triuridaceae. 6 Indomal.
- Andryala** L. Compositae (13). 15 Medit.
- Andrzeiowskya** Reichb. Cruciferae (2). 1 As. Minor.
- Anechites** Griseb. Apocynaceae (I. 3). 1 Cuba.
- Aneilema** R. Br. Commelinaceae. 85 trop. esp. |*.
- Aneimia** Sw. Schizaeaceae. 80 trop. and subtrop. The l. divides at the base (cf. fronds of *Ophioglossaceae*) into sterile and fertile portions. The two lowest pinnae form a pair of panicles bearing sori (cf. *Osmunda*), resembling the infl. of many fl. plants.
- Anelasma** Miers = *Abuta* Aubl. p.p. (Menisp.). 5 W. I., S. Am.
- Anelytrum** Hackel. Gramineae (9). 1 Italy.
- Anemarrhena** Bunge. Liliaceae (III). 1 N. China.
- Anemo-** (Gr. pref.), wind-; **-philous** (fl.), pollinated by wind, usu. showing dry incoherent pollen, freely accessible to wind, large stigmas, and lack of conspicuousness, *Artemisia*, *Betulaceae*, *Calluna*, *Carex*, *Casuarina*, *Coniferae*, *Corylus*, *Cycadaceae*, *Cyperaceae*, *Elaeagnaceae*, *Empetrum*, *Fraxinus*, *Gramineae*, *Humulus*, *Juglandaceae*, *Juncaceae*, *Littorella*, *Mercurialis*, *Myrothamnaceae*, *Platanus*, *Potamogeton*, *Quercus*, *Rumex*, *Sparganium*, *Spinacia*, *Thalictrum*, *Tri-glochin*, *Typhaceae*, *Ulmaceae*, *Urticaceae*, *Zea*, &c.
- Anemoisandra** Pohl. Inc. sed. 1 Brazil.
- Anemone** L. Ranunculaceae (3). 120 cosmop. *A. nemorosa* (wood anemone) and *A. Pulsatilla* L. (pasque fl.) Brit. Herbs with rhiz. and radical l. Fl. sol. or in cymes, apert.; the invol. of green l. in the hepatica (*A. Hepatica* L.) is so close to the fl. as to resemble a K. The fl. of the first named contains no honey, is white, and visited for pollen (class Po.); that of the third is blue and bee-visited, while in

the second there is honey secreted by stds., and the long-tubed blue fl. is visited mainly by bees. The achenes of many spp. have hairs aiding wind-dispersal. Cult. orn. fl.

Anemonopsis Sieb. et Zucc. Ranunculaceae (2). 1 Japan.

Anemonospermus Böhm. Menispermaceae (inc. sed.). Nomen.

Anemopaegma Mart. Bignoniaceae (1). 40 trop. S. Am.

Anemopsis Hook. et Arn. (*Houttuynia* BH.). Saurur. 1 California.

Anepsias Schott. (*Rhodospatha* Poepp. BH.). Arac. (11). 1 Venezuela.

Anerincleistus Korth. Melastomaceae (1). 20 Malaya.

Anetanthus Hiern. Gesneriaceae (1). 5 trop. Am.

Anethum Tourn. ex L. (*Peucedanum* BH.). Umbel. (III. 5). 2 W. As.

Anetium (Kunze) Splitg. Polypod. 1 trop. Am.

Aneulophus Benth. Erythroxyl. (Linac. BH.). 1 Guinea.

Anfractus (Lat.), sinuous.

Angadenia Miers. Apocynaceae (inc. sed.). 30 Mex., S. Am.

Angeia Tidestrom. Myricaceae. 1 N. temp.

Angeja Vand. Inc. sed. 1 Brazil.

Angelesia Korth. (*Trichocarya* Miq. BH.). Rosaceae (VI. b). 2 Sundas.

Angelica (Riv.) L. (incl. *Archangelica* Hoffm.). Umbel. (III. 6). 70 ✕ and N. Z. The petioles of *A. (Arch.) officinalis* are offic., and are used in confectionery.

Angelin tree (W. I.), *Andira inermis* H.B. et K.

Angelocarpa Rupr. (*Coelopleurum* Ledeb.). Umbel. (III. 5). 1 C. As.

Angelonia Humb. et Bonpl. Scrophul. (II. 1). 30 trop. Am., W. Ind.

Angianthus Wendl. Compositae (4). 25 temp. Austr. Heads cpd.

Angico gum, *Piptadenia rigida* Benth.

Angiopetalum Reinw. Myrsinaceae (inc. sed.). 1 Java.

Angiopteris Hoffm. Marattiaceae (1). 65 Madag., Indomal., *A. evecta* Hoffm. Large ferns with the sori not united into synangia as in most M. Annulus like that of Osmundaceae at apex of sporangium. The r. arise close to apex, and burrow down and outwards through the stem and leaf-bases, emerging some distance down.

Angiospermae. One of the two great divisions of Spermaphyta, distinguished from Gymnosperms by the fact that the cpls. are so infolded or arranged as to form an ovary in which the ovules are borne. Endosperm formed after, instead of before fert.

All A. possess true fl., the essential parts of which are sta. and cpls. The former bear pollen-sacs (= microsporangia of Pteridophyta), the latter ovules (megasporangia). The ovule is always enclosed in the cpl.; it has two (or one) integuments, and usually one embryo-sac (more in some chalazogamic forms, Loranthaceae, &c.). The pollen-tube may enter by the micropyle or by the chalaza (cf. Chalazogamae). Parthenogenesis, or development of the ovum into an embryo without fert., occurs in *Antennaria*, *Alchemilla*, *Hieracium*, *Houttuynia*, *Thalictrum*, *Wikstroemia*, &c., embryo formation by adv. budding in *Alchornea*, *Citrus*, *Euonymus*, *Funkia*, *Nothoscordum*, &c., apogamy (cf. Filicineae) in *Balanophora*.

A. are divided into Mono- and Di-cotyledons (cf. classification at end of the book).

Angkalanthus Balf. f. Acanthaceae (IV B). 1 Socotra.

Angolaea Wedd. Podostemaceae. 1 Angola.

- Angophora** Cav. Myrtaceae (II. 1). 5 E. Austr.
- Angorchis** Thou. = *Angraecum* Bory (Orchid.).
- Angostura bark**, *Cusparia febrifuga* Humb.
- Angostyles** Benth. Euphorbiaceae (A. II. 2). 1 N. Brazil.
- Angraecopsis** Krzl. Orchidaceae (II. 20). 1 trop. E. Afr.
- Angraecum** Bory. Orchidaceae (II. 20). 120 trop. Afr., Madag., Masc.
Monopodial epiphytes, often cult. *A. sesquipedale* Thou. (wax-fl.)
has an enormous spur a foot long, secreting honey at the bottom and
is probably fert. by a moth with equal proboscis (cf. *Yucca*, *Ficus*).
See Darwin's *Orchids*, p. 162. Some are leafless.
- Anguillaria** R. Br. Lili. (1). 2 Austr., Tasm. **A.** Gaertn. = *Ardisia*.
- Anguillicarpus** Burkill. Cruciferae (2). 1 Beluchistan.
- Anguloa** Ruiz et Pav. Orchid. (II. 12). 5 Peru, Colombia.
- Anguria** (Tourn.) L. Cucurbit. (2). 25 trop. Am.
- Anguriopsis** J. R. Johnston. Cucurbit. (2). 1 Venezuela.
- Angusti-** (Lat. pref.), narrow-; **-folius** (Lat.), -leaved.
- Angylocalyx** Taub. Leguminosae (III. 1). 6 trop. Afr.
- Anhalonium** Lem. = *Mammillaria* Haw. (*BH.*) = *Ariocarpus* Scheidw.
- Aniba** Aubl. (*Aydendron* Nees, *Ocotea* *BH.*). Lauraceae (II). 55 trop. Am.
- Anigozanthos** Labill. Amaryll. (III) (*Haemod. BH.*). 8 S.W. Austr.
Fl. transversely ♂.
- Anil** Ludw. ex O. Ktze. = *Indigofera* L. (Legum.).
- Animals**, seed-dispersal by, cf. Seed-dispersal.
- Anime** (resin), copal.
- Anisacantha** R. Br. (*Bassia* All. p.p. *EP.*). Chenopodiaceae (A). 6 Austr.
- Anisacanthus** Nees. Acanthaceae (IV. B). 10 Am.
- Anisadenia** Wall. Linaceae. 2 Himalaya.
- Anise**, aniseed, *Pimpinella Anisum* L.; **star-**, **-tree**, *Illicium verum* Hook. f.
- Aniseia** Choisy (*Ipomoea* L. p.p. *BH.*). Convolv. (I). 15 trop.
- Aniselytron** Merrill. Gramineae (8). 1 Phil. Is.
- Aniserica** N. E. Br. Ericaceae (IV. 2). 1 S. Afr.
- Aniso-** (Gr. pref.), unequal-; **-merous**, with — numbers in the whorls;
-phyll, with — l. at same node, *Anisophyllea*, *Centradenia*, *Columnea*, *Gardenia*, *Gesneriaceae*, *Klugia*, *Melastomaceae*, *Nyctaginaceae*,
Philadelphus, *Randia*, *Sambucus*, *Scrophularia*, *Strobilanthes*, *Tabernaemontana*.
- Anisocarpus** Nutt. (*Madia* Molina). Compositae (5). 5 W. U.S.
- Anisochaeta** DC. Compositae (4). 1 S. Afr.
- Anisochilus** Wall. Labiatae (VII). 20 trop. As., Afr.
- Anisocoma** Torr. et Gray. Compositae (13). 1 W. U.S.
- Anisocycla** Baill. Menispermaceae. 6 S. and trop. Afr., Madag.
- Anisodus** Link et Otto = *Scopola* Jacq. p.p. (Solan.).
- Anisolobus** A. DC. = *Odontadenia* Benth. (Apocyn.).
- Anisolotus** Bernh. = *Hosackia* Dougl. (Legum.). 5 U.S.
- Anisomallon** Baill. Icacin. (Olac. *BH.*). 1 New Caled.
- Anisomeles** R. Br. Labiatae (VI). 6 Indomal.
- Anisomeria** D. Don. Phytolaccaceae. 3 Chili.
- Anisomeris** Presl (*Chomelia* Jacq.). Rubi. (II. 2). 17 trop. S. Am.

Anisonema A. Juss. = *Phyllanthus* L. p.p. (Euphorb.).

Anisopappus Hook. et Arn. Compos. (4). 8 S. China to S. Afr.

Anisophyllea R. Br. Rhizophoraceae. 15 palaeotrop. It differs from other R. in its drupe fr., exalb. seed, and alt. exstip. sometimes anisophyllous l.

Anisophyllum Haw. = *Euphorbia* L. p.p. **do.** Jacq. Inc. sed. 1 Baru.

Anisopoda Baker. Umbell. (III. 5). 1 Madag.

Anisopogon R. Br. Gramineae (9). 1 Austr.

Anisoptera Korth. Dipterocarpaceae. 20 E. Indomal.

Anisopus N. E. Br. Asclepiadaceae (II. 3). 2 trop. W. Afr.

Anisosciadium DC. (*Echinophora* L. *BH.*). Umbell. (III. 1). 1 W. As.

Anisosperma Manso. Cucurb. (1). 1 Brazil. Seeds medicinal.

Anisostachya Nees (*Justicia* *BH.*). Acanth. (IV. B). 5 trop. Afr., Madag.

Anisostigma Schinz. Aizoaceae (II). 1 Namaland.

Anisotes Nees. Acanthaceae (IV. B). 8 trop. Afr., Arabia.

Anisothrix O. Hoffm. Compositae (4). 1 S. Afr.

Anisotoma Fenzl. Asclepiadaceae (II. 3). 1 S. Afr.

Anisotome Hook. f. = *Aciphylla* Forst. (Umbell.).

Annatto, *Bixa Orellana* L.

Anneslea Wall. (*Mountnorrisia* Szysz.). Theac. 2 Indomal.

Annesorrhiza Cham. et Schlechtd. Umbelliferae (III. 5). 10 S. Afr.
A. capensis C. et S. has ed. roots.

Annexed, adnate.

Annona L. = *Anona* L.

Annotinus (Lat.), applied to branches of last year's growth.

Annual, **annuus** (Lat.), living one year only.

Annulate, marked with rings.

Annulus, *Filicineae* *Leptosp.*

Anochilus Rolfe. Orchidaceae (II. 1). 2 S. Afr.

Anoda Cav. Malvaceae (2). 10 trop. Am. Cult. orn.

Anodal, in the upward direction on the genetic spiral.

Anodendron A. DC. Apocynaceae (II. 1). 10 Ceylon to China.

Anodiscus Benth. Gesneriaceae (II). 1 Peru.

Anodopetalum A. Cunn. Cunoniaceae. 1 Tasmania.

Anoectochilus Blume. Orchidaceae (II. 2). 25 Indomal. Cult. orn. l.

Anoectomaria × Rolfe. Hybrid of last with *Haemaria*.

Anogeissus Wall. Combretaceae. 5 trop. Afr., As.

Anogra Spach (*Oenothera* L. p.p.). Onagrac. (2). 20 N. Am.

Anogramma Link. Polypodiaceae. 10 trop. Am., Japan.

Anoiganthus Baker. Amaryllidaceae (1). 2 Natal and trop. Afr.

Anomalanthus Klotzsch = *Simochilus* Klotzsch (Eric.).

Anomanthodia Hook. f. (*Randia* p.p. *EP.*). Rubiac. (1. 8). 1 trop. As.

Anomatheca Ker-Gawl. = *Lapeirousia* Pourr. (Irid.).

Anomianthus Zoll. Anonaceae (1). 1 trop. As.

Anomochloa Brongn. Gramineae (6). 1 Brazil.

Anomopanax Harms. Araliaceae (3). 5 Malay Arch.

Anomospermum Miers. Menispermaceae. 8 Brazil, Guiana.

Anomostephium DC. = *Aspilia* Thou (Compos.).

Anomotassa K. Schum. Asclepiadaceae (II. 3). 1 Ecuador.

Anona L. Anonaceae (4). 70 trop. esp. Am. Fr. aggregate, often

very large, made up of the individual berries derived from the separate cpls., sunk in, and united with, the fleshy recept. That of some cult. sp. is ed., e.g. of *A. Cherimolia* Mill. (cherimoyer; trop. Am.), *A. squamosa* L. (sweet sop, custard or sugar apple; E. Ind.), *A. muricata* L. (sour sop; trop. Am.) and *A. reticulata* L. (custard-apple or bullock's heart; trop. Am.).

A. (Geanthemum) rhizantha Eichl. (Braz.) has rhizomes below the soil, bearing scale leaves only. The fls. are borne on branches of these above the ground.

Anonaceae (EP.; BH. incl. *Eupomatiaceae*). Dicots. (Archichl. Ranales). 46 gen. 820 sp. chiefly trop. (esp. Old World). Trees and shrubs (exc. one) with usu. two-ranked undivided exstip. l. Stem sometimes sympodial, at least in infl. Oil passages present.

Fls. reg. ♂ (rarely unisex.), solitary or in infl. of various types. Usu. formula $P\ 3+3+3$ (one or two outer whorls sepaloïd); $A\ \infty$ (rarely few), spiral, hypog.; $\underline{G}\ \infty$ (*Monodora* is syncp.). Ovules usu. ∞ , ventral or basal, anatrop. Fr. commonly an aggregate of berries, when many-seeded frequently constricted between the seeds. In *Anona*, &c. the berries coalesce with the receptacle. Ruminant endosperm (the chief character that separates A. from *Magnoliaceae*). Many yield ed. fr., e.g. *Anona*, *Artabotrys*. [BH. chars. incl. Po and fl. perig.]

Classification and chief genera (after Prantl):

a. Apocarpous.

1. *Uvarieae* (P unjointed or clawed with claws against sta.): *Uvaria*, *Asimina*, *Guatteria*, *Unona*, *Cananga*.
2. *Miliuseae* (P valvate, usu. unequal, if clawed the claws away from sta.): *Miliusa*.
3. *Hexalobeae* (P equal, with crossfolds in bud): *Hexalobus*.
4. *Xylopieae* (P hollow at base, $\pm$ constricted above it and again spread out or laterally compressed): *Xylopia*, *Artabotrys*, *Anona*.

b. Syncarpous; ov. uniloc. with parietal plac.

5. *Monodoreae*: *Monodora* (only genus).

[Placed in *Ranales* by BH.]

Anonidium Engl. et Diels. *Anonaceae* (1). 2 W. trop. Afr.

Anonymus Walt. Inc. sed. (pro omnibus dubiis).

Anoplophytum Beer = *Tillandsia* L. (Bromel.).

Anopteris (Prantl) Diels. *Polypodiaceae*. 1 trop. Am.

Anopterus Labill. *Saxifragaceae* (v). 2 E. Austr., Tasm.

Anopyxis Pierre. *Rhizophoraceae*. 1 trop. Afr.

Anotis DC. *Rubiaceae* (1. 2). 25 Indo-mal., 1 S. Am.

Anotites Greene. *Caryophyllaceae* (II. 1). 20 N. Am.

Anoumabia A. Chevalier. *Sapindaceae*. 1 Ivory Coast.

Anplectrum A. Gray (*Diplectria* Rchb.). *Melastom.* (1). 20 Malaya.

Anredera Juss. *Basellaceae*. 1 trop. Am.

Ansellia Lindl. *Orchidaceae* (II. 5). 4 trop. Afr., Natal.

Ante- (Lat. pref.), before; **-petalous** (sta.), opp. petals; **-posed**, opp. and not alt. with.

Antelaea Gaertn. Inc. sed. 2 Java.

Antennaria Gaertn. *Compositae* (4). 75 extra-trop., exc. Afr. *A.*

- dioica* Gaertn. (mountain everlasting, cat's foot) in Brit. is a small creeping dioec. perenn., hairy and semi-xero., occurring chiefly on hills and at the sea-shore, but not common in intermediate places. In *A. alpina* (L.) R. Br. only ♀ plants usu. occur, and show true *parthenogenesis*, the ovum developing into an embryo without fert. (not to be confused with the veg. budding of *Alchornea*).
- Anterior** (side of fl.), facing the bract; **antero-posterior**, median.
- Anthacanthus** Nees. Acanthaceae (IV. B). 6 W. Ind.
- Anthaeantia** Beauv. Gramineae (5). 8 warm Am.
- Anthagathis** Harms. = *Jollydora* Pierre (Legum.). 1 trop. Afr.
- Anthelia** Schott. Araceae (inc. sed.). 1 Celebes.
- Anthemis** Mich. ex L. Compositae (7). 120 Eur., Medit. (4 Brit., chamomile). The fr. of *A. arvensis* L. has papillae on its upper surface which become sticky when wet (*cf.* *Linum*). Shows suborders well. *A. nobilis* L. (chamomile) fl. offic.
- Anthephora** Schreb. Gramineae (3). 10 trop. Am., trop. and S. Afr.
- Anther**, *cf.* Stamen; **-idium**, *Filicineae Lepto, Pteridophyta*; **-ozoid**, spermatozoid, *Pteridophyta*.
- Anthericopsis** Engl. Commelinac. (Liliac. *BH.*). 1 E. trop. Afr.
- Anthericum** L. Liliaceae (III). 130 Afr., Eur., Am.
- Antheropeas** Rydberg. Compos. (6). 5 N. Am.
- Antherothamnus** N. E. Br. Scrophular. (II. 4). 1 S. Afr.
- Antherotoma** Hook. f. Melastom. (I). 2 trop. Afr., Madag.
- Antherura** Lour. Rubiaceae (inc. sed.). 1 S.E. As., Malay Arch.
- Antherylium** Rohr. et Vahl (*Ginoria* Jacq. p.p. *EP.*). Lythr. 2 Mex., W. Ind.
- Anthesis**, flower-opening.
- Anthistiria** L. f. (*Themeda*). Gramineae (2). 15 palaeotrop. *A. vulgaris* Hack. (kangaroo grass) covers large areas in Austr. and S. Afr.
- Antho-** (Gr. pref.), flower-; **-carp**, *Nyctaginaceae*; **-lysis**, retrograde metamorphosis of fl.; **-philous**, fl.-visiting; **-phore**, stalk between K and C; **-taxy**, arrangement of fl.
- Anthobembix** Perkins. Monimiaceae. 3 New Guinea.
- Anthobolus** R. Br. Santalaceae. 5 Austr. Hypogynous.
- Anthobryum** Phil. Frankeniaceae (? Primul.). 2 Bolivia.
- Anthocarapa** Pierre (*Amoora* p.p.). Meliac. (III). 2 Cochin China.
- Anthocephalus** A. Rich. Rubiaceae (I. 6). 3 Malaya.
- Anthocercis** Labill. Solanaceae (5). 20 Austr.
- Anthochlamys** Fenzl. Chenopodiaceae (A). 1 W. Centr. As.
- Anthochloa** Nees et Meyen. Gramineae (10). 3 Am.
- Anthocleista** Afzel. Loganiaceae. 25 trop. Afr.
- Anthodiscus** G. F. W. Mey. Caryocarac. (Ternstr. *BH.*). 4 trop. S. Am.
- Anthodon** Ruiz et Pav. = *Salacia* L. (Hippocrat.).
- Anthogonium** Wall. ex Lindl. Orchid. (II. 9). 1 Himalaya, Burma.
- Antholoma** Labill. Elaeocarp. 3 New Caled., New Guinea.
- Antholyza** L. Iridaceae (III). 25 Afr. Cult. orn. fl.
- Anthopogon** Neck. (*Gentiana* L. p.p.) Gentian. 5 N. Am.
- Anthopterus** Hook. Ericac. (III. 2) (*Vaccin. BH.*). 10 Andes.
- Anthospermum** L. Rubiaceae (II. 7). 35 Afr., Madag.
- Anthostema** A. Juss. Euphorb. (A. II. 8). 3 trop. Afr., Madag. Fls.

in a cyathium like *Euphorbia*, but the ♂, reduced as in *E.* to 1 sta., has a P where in *E.* there is a joint. The ♀ also has a P.

Anthostyrax Pierre (*Styrax* p.p.). *Styracaceae*. 1 Tonquin.

Anthotium R. Br. *Goodeniaceae*. 2 S.W. Austr.

Anthotroche Endl. *Solanaceae* (5). 4 Austr.

Anthoxanthum L. *Gramineae* (7). 14 N. temp. and Ind.; *A. odoratum* L. (sweet vernal grass) Brit. The stems contain large quantities of coumarin, to which the smell char. of newly mown hay is due; it may be recognized by chewing a stalk. Fl. with 2 sta. only, protog. Awns of fr. hygroscopic.

Anthriscus Bernh. *Umbelliferae* (III. 2). 10 Eur., As., Afr., 2 Brit., incl. *A. sylvestris* Hoffm. (chervil). *A. Cerefolium* Hoffm. is the cult. chervil of France &c.

Anthurium Schott. *Araceae* (I). 500 sp. trop. Am. Most are sympodial herbs, with an accessory bud beside the 'continuation' bud of the sympodium. Axillary shoot often 'adnate' to the main one (cf. *Solanaceae* &c.). Aerial roots frequent at the base of the l. Some epiphytes. Fls. ♀, with P, protog., arranged in a dense mass upon a spadix, at whose base is a flat usu. brightly coloured spathe. Fr. a berry; when ripe it is forced out of the spadix and hangs by two threads formed from the P. In *A. longifolium* G. Don the root apex has been observed to develop into a shoot.

-anthus (Gr. suff.), -flowered.

Anthyllis Riv. *Leguminosae* (III. 4). 20 Eur., N. Afr., W. As. (*A. vulneraria* L., lady's fingers, kidney-vetch, Brit.). Fl. mech. resembles *Lotus*; stigma only receptive when rubbed.

Anti- (Lat. pref.), against, opp.; **-dromous**, r. and l. handed; **-petalous**, **-sepalous**, opp. pet. or sep.; **-thetic**, not homologous.

Antiaris Lesch. *Moraceae* (II). 6 Indomal. incl. *A. toxicaria* Lesch. (Upas-tree). The latex is poisonous. Extraordinary stories of its effects were spread abroad about a century ago. The surroundings were said to be a desert, the poisonous influence emanating from the tree being fatal to life (see *Treas. of Bot.*).

Antiaropsis K. Schum. *Moraceae* (II). 1 New Guinea.

Anticharis Endl. *Scrophulariaceae* (I. 2). 10 Afr., Arabia.

Anticlea Kunth = *Zygadenus* Michx. p.p. (Lili.).

Anticoryne Turcz. = *Baeckea* L. (Myrtac.).

Anticous, on anterior side.

Antidaphne Poepp. et Endl. *Loranthac.* (II). 2 Peru to Venezuela.

Antidesma Burm. ex L. *Euphorbiaceae* (A. I. 1). 90 palaeotrop.

Antidote-cocoon (W. I.), *Fevillea cordifolia* L.

Antigonon Endl. *Polygonaceae* (III. 1). 4 trop. Am. *A. Leptopus* Hook. et Arn. is a (stem) tendril climber, cult. orn. fl.

Antinoria Parl. (*Aira* L. p.p. *BH.*) *Gramin.* (9). 2 S. Eur.

Antiphylla Haw. = *Saxifraga* L. p.p. (*Saxifr.*). 15 Eur.

Antiphytum DC. *Boraginaceae* (IV. 4). 6 S. trop. Am.

Antirrhinum Tourn. *Scrophulariaceae* (II. 3). 36 * *A. majus* L. (snapdragon) in Brit., but probably an escape. The mouth of the fl. is closed and the honey thus preserved for bees, which alone are strong enough to force an entrance.

Antirrhoea Comm. *Rubiaceae* (II. 2). 25 E. As. to Madag., W. Ind.

- Antistrophe** A. DC. Myrsinaceae (11). 4 Indomal.
Antitaxis Miers (*Pycnarrhena* Miers *EP.*). Menisp. 4 Malaya.
Antithrixia DC. Compositae (4). 3 S. Afr. to Abyss.
Antizoma Miers (*Cissampelos* L. p.p. *BH.*). Menisp. 5 S. warm Afr.
Antochortus Nees (*Willdenowia* Thunb.). Restion. 10 S. Afr.
Antonia Pohl. Loganiaceae. 1 Brazil, Guiana.
Antrocaryon Pierre. Anacardiaceae (2). 2 Gaboon.
Antrophyum Kaulf. Polypodiaceae. 30 trop. and subtrop.
Ants and plants, *cf.* Myrmecophily.
Anubias Schott. Araceae (v). 13 W. Afr.
Anulocaulis Standley (*Boerhaavia* L. p.p.). Nyctag. 3 N. Am.
Anvillea DC. Compositae (4). 3 Medit.
Anychia Michx. Caryophyllaceae (1. 4). (Illecebr. *BH.*) 2 N. Am.
Anychiastrum Small (*Paronychia* L. p.p.). Caryophyll. (1. 4). 3 N. Am.
Aonikena Spegazz. Euphorbiaceae (A. II. 2). 1 Patagonia.
Aostea Buscalioni et Muschler. Compos. (4). 2 Centr. Afr.
Aotus Sm. Leguminosae (III. 2). 11 Austr., Tasm.
Apabuta Griseb. Menispermaceae. Nomen.
Apalatoa Aubl. (*Crudia* Schreb.). Leguminosae (II. 3). 11 trop.
Apaloxylon Drake del Castillo. Leguminosae (II. 2). 1 Madag.
Apama Lam. (*Bragantia* Lour. *BH.*). Aristoloch. 5 Indomal.
Apargia Scop. = *Leontodon* L. (Compos.).
Apargidium Torr. et Gray. Compositae (13). 1 Calif. — Alaska.
Aparine Tourn. ex Mill. = *Galium* Tourn. (Rubiace.).
Apatemone Schott (*Schismatoglottis* Z. et M.). Arac. (v). 1 Borneo.
Apeiba Aubl. Tiliaceae. 7 warm Am. Some have good wood.
Apera Adans. Gramineae (8). 2 Eur., W. As. *A.* (*Agrostis*) *Spica-Venti*, Beauv. (silky bent-grass), Brit.
Apetahia Baill. Campanulaceae (III). 1 Tahiti and Raiatea.
Apetalae = Monochlamydeae or Incompletae.
Apetalous, petal-less, when one would expect a C; *Abatia*, *Acer*, *Achlys*, *Alchemilla*, *Anemone*, *Azara*, *Bocconia*, *Datisceae*, *Heuchera*, *Lespedeza*, *Liquidambar*, *Fraxinus*, *Oleaceae*, *Parrotia*, *Pringlea*, *Sagina*, *Thalictrum*, and *cf.* *Cleistogamy*.
Apetlorhamnus Nieuwland (*Rhamnus* p.p.). Rhamn. 1 N. Am.
Aphaenandra Miq. Rubiaceae (inc. sed.). 1 Sumatra.
Aphaerema Miers. Flacourt. (8) (Samyd. *BH.*). 1 S. Paulo.
Aphanactis Wedd. Compositae (5). 2 Andes.
Aphanamixis Blume (*Amoora* pp. *BH.*). Meliac. (III). 8 Malaya.
Aphanandrium Lindau (*Neriacanthus*). Acanth. (IV. B). 1 Columbia.
Aphananthe Planch. Ulmaceae. 5 Austr., E. As.
Aphanelytrum Hackel. Gramineae (8). 1 Ecuador.
Aphanes L. = *Alchemilla* L. (Ros.).
Aphania Blume (*Sapindus* L. p.p. *BH.*). Sapind. (I). 12 trop. As., Afr.
Aphanisma Nutt. Chenopodiaceae (A). 1 California.
Aphanocalyx Oliv. Leguminosae (II. 2). 1 Guinea.
Aphanococcus Radlk. Sapindaceae (I). 1 Celebes.
Aphanomyrtus Miq. Lauraceae (I). 3 Malaya.
Aphanopetalum Endl. Cunoniaceae. 2 S.E. and S.W. Austr.
Aphanopleura Boiss. Umbell. (III. 5). 1 Armenia.

- Aphanostephus** DC. Compositae (3). 5 Mex., U.S.
- Aphanostylis** Pierre (*Clitandra* p.p.). Apocyn. (1. 1)*. 5 trop. Afr.
- Aphantochaeta** A. Gray (*Pentachaeta* p.p. *EP.*). Compos. (3). 2 Calif.
- Aphelandra** R. Br. Acanth. (IV. B). 60 warm Am. Cult. orn. fl.
- Aphelexis** D. Don (*Helichrysium* p.p. *EP.*). Compos. (4). 10 Madag.
- Aphelia** R. Br. Centrolepidaceae. 1 S. Austr., Tasm.
- Apheliotropism**, negative heliotropism.
- Aphloia** Benn. (*Neumannia* A. Rich.). Flacourt. (4) (Bix. *BH.*).
4 S. Afr., Madag., Masc.
- Aphora** Nutt. = *Argythamnia* P. Br. (*BH.*) = *Ditaxis* Vahl p.p.
- Aphotic**, dark.
- Aphragmus** Andr. (*Braya* p.p. *BH.*). Cruciferae (2). 1 Alaska.
- Aphyllanthes** Tourn. ex L. Liliaceae (III). 1. W. Medit., *A. monspeliensis* L. The sol. fl. is surrounded by an invol. of br., and is regarded as the only remaining fl. of a head; the other fl. are only repres. by their bracts.
- Aphyllarum** Sp. Moore. Araceae (VI). 1 Matto Grosso.
- Aphyllon** Mitch. (*Orobanch* p.p. *EP.*). Orobanchaceae. 10 N. Am.
- Aphyllorchis** Blume. Orchidaceae (II. 2). 12 Indomal.
- Aphyll**, absence of l.
- Apiastrum** Nutt. Umbelliferae (III. 4). 2 N. Am.
- Apical** (plac.), at upper end of ovary.
- Apicra** Willd. Liliaceae (III). 10 S. Afr. Some, *e.g.* *A. foliolosa* Willd., show extreme superposition of l., forming almost solid masses of tissue. Many cult. orn. fl.
- Apiculate**, with small sharp point.
- Apinagia** Tul. Podostemaceae. 16 Guiana, Brazil.
- Apio**, *Arracacia xanthorrhiza* Bauer &c.
- Apiocarpus** Montr. Staphyleaceae. 1 New Caled.
- Apiopetalum** Baill. Araliaceae (3). 2 New Caled.
- Apios** Moench. Leguminosae (III. 10). 8 N. Am., E. As. *A. tuberosa* Moench is a climber with tuberous base. The keel of the fl. forms a tube which bends up and rests against a depression in the standard. When liberated by insects the tension of the keel makes it spring downwards, coiling up more closely, and causing the essential organs to emerge at the apex. Cult. orn. fl.
- Apium** (Tourn.) L. Umbelliferae (III. 5). 40 cosmop., 3 Brit. *A. graveolens* L. is the celery. Cult., and the etiolation of the leaf-stalks by heaping earth over them, render the garden form ed. A var. is the turnip-rooted celery or celeriac.
- Aplectrum** Torr., Nutt. Orchidaceae (II. 9). 2 N. Am.
- Apleura** Phil. Umbelliferae (I. 2). 1 Chili.
- Apilophium** Cham. (*Haplophium*). Bignoniaceae (1). 3 Brazil.
- Aplopappus** Cass. (*Haplopappus* Endl.). Compos. (3). 125 W. Am.
- Aplophyllum** A. Juss. = *Ruta* L. (Rutaceae).
- Aplotaxis** DC. = *Saussurea* DC. (Compos.).
- Apluda** L. Gramineae (2). 1 Indomal., Madag.
- Apo-** (Gr. pref.), from; **-carpous**, with free cpls., *Ranunculaceae*, *Rosaceae*, &c.; **-gamy**, omission of sexual process, *Angiospermae*, *Asplenium*, *Balanophora*, *Elatostema*, *Filicineae* *Leptosp.*, *Pteris*, *Todea*; **-geotropic**, **-heliotropic**, negatively g. or h., *Bawenia*;

-petalous, polypetalous; -spory, *Filicineae Leptosp.*, *Dryopteris*;
-tropical, anatr. with ventral raphe.

Apocarpae (BH.). The 6th series of Monocotyledons.

Apochoris Duby. Primulaceae. 1 N. China.

Apocopsis Nees. Gramineae (2). 8 China to Madag.

Apocynaceae (EP., BH.). Dicots. (Sympet. Contortae). 130 gen., 1000 sp., mostly trop.; a few temp.; *Vinca minor* gives the N. limit in Eur. Erect plants rare, mainly twining shrubs; in the tropics many are large lianes. The stem has bi-collateral bundles; latex always present. L. simple, usu. opp., entire, rarely with small interpet. stip. The primary type of infl. is a panicle, but in its later branchings it sometimes goes over into a dich. cyme or a cincinnus. Br. and bracteoles both present.

Flr. ♀, reg., 5- or 4-merous. K (5), deeply lobed, quincuncial with odd sep. post.; C (5), usu. salver- or funnel-shaped, often hairy within, convolute (valvate in a few rare gen.); A 5, alt. with pets., epipet., with short incl. filaments; anther lobes full of pollen to the base, or empty at base and prolonged into rigid spines. Disc usu. present. G (2) or 2 (united by style) or more, 1- or 2-loc. when syncp. Ov. ∞, anatr., pend. Style usu. simple with thickened head. Berry, or more often 2 follicles. Seeds usu. flat and often with a crown of hairs serving for wind distr. Endosperm or none; embryo straight.

In the common A. with a large styler head the stigma is at the edge or under surface of the head and self-fert. is almost impossible. An interesting mech. is found in *Apocynum androsaemifolium*. Many are showy ornamentals. Funtumia, Hancornia, Landolphia, Willughbeia, &c. yield rubber. Several yield useful drugs, alkaloids, &c.

Classification and chief genera (after K. Schumann):

I. **PLUMIEROIDEAE** (sta. free or only loosely joined to styler head; thecae full of pollen, rarely with spines; seeds usu. without hairs):

1. *Arduineae* (syncarpous; style not split at base): Arduina, Allamanda, Landolphia.
2. *Pleiocarpeae* (apocarpous; style split at base; more than 2 cpls.): Pleiocarpa.
3. *Plumiereae* (ditto; 2 cpls.): Plumiera, Amsonia, Vinca, Tabernaemontana, Cerbera.

II. **ECHITOIDEAE** (sta. firmly joined to styler head; thecae empty at base, and with spines; seeds hairy):

1. *Echitideae* (anthers included): Apocynum, Nerium, Strophanthus, Dipladenia.
2. *Parsonieae* (anthers excluded): Parsonsia, Lyonsia, Wrightia.

Apocynum (Tourn.) L. Apocyn. (II. 1). 20 N. temp. Some cult., incl. *A. androsaemifolium* L. (American fly-trap), which has fl. mech. like Asclepiadaceae. Ov. crowned by disc, stigmatic below and surrounded by rigid lignified sta., at whose base is honey. An insect withdrawing its proboscis usu. brings it up the narrow slit between sta., at whose base is a drop of cement. Higher up the anthers open laterally, and thus the pollen is attached to the proboscis, but strength

is needed, and small insects are usu. caught, as may be seen in gardens. Seeds hairy (wind carriage).

Apodanthera Arn. Cucurbitaceae (2). 20 warm Am.

Apodanthes Poit. Rafflesiac. (Cytinac. *BH.*). 5 trop. S. Am.

Apodiscus Hutch. Euphorb. (A. I. 1). 1 French Guiana.

Apodocephala Baker. Compositae (1). 2 Madag.

Apodolirion Baker. Amaryllidaceae (1). 6 S. Afr.

Apodytes E. Mey. Icacinaceae. 14 S. Afr. to Malaya. *A. dimidiata* E. Mey. (S. Afr., white pear), good timber.

Apogon Ell. (*Serinia* Raf.). Compositae (13). 3 N. Am.

Apollonias Nees. Lauraceae (11). 2 Canaries, Madeira.

Aponogeton L. f. Aponogetonaceae (*Naiad. BH.*). 15 palaeotrop., and S. Afr. Water pl. with sympodial tuberous rhiz. and basal l., usu. floating. Submerged l. occur in some, e.g. *A. (Ouvirandra) fenestrale* Hook. f. The whole tissue between the veins breaks up as the l. grows, leaving a network of veins with holes between. The interior does not contain the usual intercellular spaces.

The ♂ reg. fl. project above the water in spikes, sometimes divided longitudinally into 2 or 3; spathe early thrown off. P usu. 2, sometimes 3 or even 1, as in the much cult. *A. distachyum* Thunb. (Cape pondweed), where it is attached by a broad base, and looks like a br. In this sp. A ∞ , $\underline{G}$ 3—6, but usu. A 3+3, $\underline{G}$ 3, with 2 or ∞ ov. in each, anatr., erect. Fr. leathery. Embryo straight.

Aponogetonaceae (*EP.*; *Naiadeae* p.p. *BH.*). Monocots. (Helobieae). Only genus Aponogeton (*q.v.*). Distinguished from Potamogetonaceae by coloured P and straight embryo, from Scheuchzeriaceae by P and sympodial structure.

Apopetalum Pax. Rosaceae (I. 1). 1 Bolivia.

Apophyllum F. Muell. Capparidaceae (11). 1 N.E. Austr.

Apoplanesia C. Presl. Leguminosae (III. 6). 1 Mex.

Aporocactus Lem. (*Cereus* Mill. p.p.). Cactaceae (III. 1). 2 N. Am.

Aporosa Blume. Euphorb. (A. I. 1). 35 Indomal.

Aporosella Chodat. Euphorb. (A. I. 1). 1 Paraguay.

Aporrhiza Radlk. Sapindaceae (1). 3 Centr. Afr.

Aporuella C. B. Clarke. Acanth. (IV. A). 2 Malay Pen., Sumatra.

Aporum Blume (*Dendrobium* Sw. p.p. *BH.*). Orchid. (II. 15). 12 trop. As.

Aposeris Neck. (*Hyoseris* L. p.p. *BH.*). Compos. (13). 1 C. Eur. Mts.

Apostasia Blume. Orchidaceae (I. 1). 8 Indomal. Fl. almost reg. with 2 sta.; ovary 3-loc.

Appendicula Blume. Orchidaceae (II a. III.). 40 Malaya, Polynesia.

Appendiculana O. Ktze. = next.

Appendiculate, with appendages.

Appendicularia DC. Melastomaceae (1). 1 Guiana.

Apple, *Pyrus Malus* L.; **alligator-**, *Anona palustris* L.; **balsam-**, *Momordica balsamina* L.; **custard-**, *Anona squamosa* L., *reticulata* L.; **elephant-**, *Feronia Elephantum* Correa; **kangaroo-**, *Solanum aviculare* Forst.; **Kei-**, *Aberia caffra* Harv. et Sond.; **love-**, *Lycopersicum esculentum* Mill.; **Malay-**, *Eugenia malaccensis* L.; **mammee-**, *Mammea americana* L.; **May-**, *Podophyllum peltatum* L.; **pine-**, *Ananas sativus* Schult. f.; **rose-**, Malay; **star-**, *Chrysophyllum*

Cainito L.; **sugar-**, *Anona squamosa* L.; **thorn-**, *Datur Stramonium* L.; **wood-**, elephant-.

Appressed, flattened down.

Approximate, close together.

Appunia Hook. f. Rubiaceae (II. 9). 3 trop. S. Am.

Aprevalia Baill. Leguminosae (II. 7). 1 Madag.

Apricot, *Prunus Armeniaca* L.; **San Domingo-**, *Mammea americana* L.

Aptandra Miers. Olacaceae. 5 trop. S. Am., Afr.

Apteria Nutt. Burmanniaceae. 5 warm Am.

Apteron Kurz. Rhamnaceae. 1 Tenasserim.

Apteros, wingless.

Aptosimum Burchell Scrophular. (I. 2). 40 S. and trop. Afr.

Aptotheca Miers (*Forsteronia*). Apocyn. (inc. sed.). 1 Cuba.

Apuleia Mart. Legum. (II. 5). 2 Brazil. *A. praecox* Mart. excellent timber.

Aquaticus (Lat.), living in water.

Aquifoliaceae (EP.; *Ilicineae* BH.). Dicots. (Archichl. Sapindales; Olacales BH.). 5 gen., 300 sp. temp. and trop. Shrubs and trees with leathery alt., l. with minute or no stips and cymose infl. Fl. reg. unisexual, 3—6-merous; no disc. Usu. K 4, C 4, A 4, G usu. (4), 4-loc., each with 1 or 2 pend. anatr. ovules. Drupe. Endosp. *Chief genus*: *Ilex*.

Aquifolium Tourn. ex Hall. = *Ilex* L. (Aquifol.).

Aquilaria Lam. Thymelaeaceae. 8 Indomal., China. The wood of *A. Agallocha* Roxb. (Calambac, aloe-wood, eagle-wood), in about 8% of the trees, is saturated with resin (agar), used in India as a drug and perfume.

Aquilegia (Tourn.) L. Ranunculaceae (2). 75 N. temp. *A. vulgaris* L. (columbine), Brit., cult. orn. fl., with many others and many hybrids. Pets. with long spurs secreting honey (*cf.* *Delphinium*). Fl. of class H, protandrous, visited by humble-bees. Sta. often 50 or more, in whorls of 5.

Arabian coffee, *Coffea arabica* L.

Arabidopsis Schur. (*Sisymbrium* L. BH., *Stenophragma* EP.). Cruc (2). 4 Eur., W. As.

Arabis Linn. Cruciferae (4). 220 N. temp., S. Am., 5 Brit. (rock-cress). Cult. orn. fl.

Araceae (EP.; *Aroideae* BH.). Monocots. (Spathiflorae). 105 gen., 1000 sp., trop. and temp. (92% trop.). Many types of veg. habit—herbs large and small, with aerial stems, tubers or rhiz., climbing shrubs, climbing epiph., marsh pl., one water pl. (*Pistia*) &c. In a few *Pothoideae* the stem is monopodial, but in most A. it is sympodial. Each joint of the sympodium begins as a rule with one or more scale l. before bearing fol. l. Accessory (collateral) buds often found in the leaf axils. Sometimes, as in *Anthurium*, *Philodendron* &c., the axillary shoot is 'adnate' to the main axis for some distance (*cf.* *Solanaceae*, *Zostera* &c.). The buds usually appear in the l. axils, but often get pushed to one side, and sometimes (*e.g.* *Pothos*) break through the leaf-bases as in *Equisetum*.

L. of many types. Pinnately and palmately divided l. are frequent, but development not like that of such leaves in Dicots. Holes are

present in the l. of *Monstera*. See *Monstera*, *Rhaphidophora*, *Philodendron*, *Helicodiceros*, *Dracontium*, *Zamioculcas*, &c.

Roots adv. and mostly formed above ground in the larger forms. Two types of aerial r.—climbing and absorbent. The former, like ivy, insensitive to gravity, show great negative heliotropism; they cling closely to the support and force their way into the crevices. The latter, insensitive to light, respond markedly to gravity; they grow down to the soil and enter it, branching out and taking up nourishment.

The larger trop. A. show interesting stages in the development of epiphytism. The climbing forms grow to considerable size and form longer and longer aerial r. as they grow upwards. The original r. at the base thus become of less and less importance and they often die away together with the lower end of the stem, so that the plant thus becomes an epiph. Of course, as it still obtains its water &c. from the soil, it is not an epiph. in the sense that *e.g.* many *Orchids* or *Bromeliaceae* are such, and it is evident that if this method of becoming epiph. were the only one found in the order, these plants could with no more justice be classed as true epiph. than the ivy which may often be seen in the 'bowls' of pollard willows in Europe, and which has come there by climbing up the trunk and dying away below. It is found however that some sp. of *Philodendron*, *Pothos*, &c. are able to commence life as epiphytes. The fleshy fr. is eaten by birds and the seed dropped on a lofty branch. The seedling forms clasping r. and dangling aerial r. which grow steadily down to the soil, even if it be 100 feet or more away. It is hardly possible to suppose that these true epiph. sp. have been evolved in any other way than from former climbing sp. Lastly, some sp. of *Anthurium* &c. are true epiph. without connection with the soil (*e.g.* *A. Hügelii* Schott = *A. Hookeri* Kunth.); they have clasping r. and also absorbent r. which ramify amongst the humus collected by the pl. itself. The aerial r. of some A. possess a velamen like *Orchids*. The l. of *Philodendron canniifolium* Schott have swollen petioles full of large intercellular spaces lined with mucilage. When rain falls these fill with water and act as reservoirs. [Cf. Schimper's *Epiph. Veg. Amerikas*.]

Fls. without br., usu. massed together on a cylindrical spadix enclosed in a large spathe; the spadix usu. terminates a joint of the sympodium (the 'continuation' bud is generally in the axil of the l. next but one before the spathe), so that there is only one formed each year. Fl. ♂ or monoec. (dioec. in *Arisaema*), with or without P. Sta. typically 6 but usually fewer (down to 1), often united into a *synandrium* (*e.g.* *Colocasia*, *Spathicarpa*); in *Ariopsis* the *synandria* again united to one another. Stds. often present, and these also may be fused into a *synandrodium* as in *Colocasia*. G with much variety of structure; frequently reduced to 1 cpl. Berry. Outer integument of seed often fleshy. Endosperm or none.

Fls. usu. protog. (even when monoec.). In many gen. (incl. most Eur.) the smell is disagreeable and attracts carrion flies as pollen carriers (see *Arum*, *Dracunculus*, *Helicodiceros*, &c.).

Many A. contain latex, which is usually poisonous but is dispelled

by heat. The rhizomes of many sp. contain much starch and are used as food (*Caladium*, *Colocasia*, *Arum*, &c.).

Classification and chief genera (after Engler):

The grouping of the A. is very difficult and account has to be taken of histological as well as external characters.

- I. *POTHOIDEAE* (land pl.; no latex or raphides; l. 2-ranked or spiral; lat. veins of 2nd and 3rd order netted; fls. usu. ♀; ov. anatr. or amphitr.): *Pothos*, *Anthurium*, *Acorus*.
- II. *MONSTEROIDEAE* (land pl.; no latex; raphides; lat. veins of 3rd, 4th, and sometimes 2nd orders netted; fl. ♀, usu. naked; ov. anatr. or amphitr.): *Rhaphidophora*, *Monstera*, *Spathiphyllum*, *Epipremnum*.
- III. *CALLOIDEAE* (land or marsh pl.; latex; fl. usu. ♀; ov. anatr. or orthotr.; l. never sagittate, usu. net-veined): *Symplocarpus*, *Calla*.
- IV. *LASIOIDEAE* (land or marsh pl.; latex; fl. ♀ or ♂ ♀; ov. anatr. or amphitr.; seed usu. exalbum.; l. sagittate, often much lobed, net-veined): *Dracontium*, *Amorphophallus*.
- V. *PHILODENDROIDEAE* (land or marsh pl.; latex; fl. naked, unisex.; ov. anatr. or orthotr.; seed usu. album.; l. usu. ||-veined): *Philodendron*, *Zantedeschia*.
- VI. *COLOCASIOIDEAE* (land or marsh pl.; latex; fl. naked unisex.; sta. in synandria; ov. orthotr. or anatr.; seed album. or not; l. net-veined): *Remusatia*, *Colocasia*, *Alocasia*, *Xanthosoma*.
- VII. *AROIDEAE* (land or marsh pl.; latex; l. various, net-veined; stems mostly tuberous; fl. unisex., usually naked; sta. free or in synandria; ov. anatr. or orthotr.; seed album.): *Spathicarpa*, *Arum*, *Dracunculus*, *Helicodiceros*, *Arisaema*.
- VIII. *PISTIOIDEAE* (swimming pl.; no latex; fl. unisex., naked; ♂ fls. in a whorl, ♀ sol.): *Pistia* (only genus).

For further details of this most interesting order, see Engler in *Nat. Pfl.* and *Pfl. R.*, from which much of the above is abridged.

[Placed in Nudiflorae by *BH.*]

Arachis Linn. Leguminosae (III. 7). 10 Brazil, Paraguay. *A. hypogaea* L. (ground-, earth-, or pea-nut), largely cult. in warm regions for its seeds, which are ed. and when pressed yield one of the many oils used in place of olive oil. The fl. after fert. bends down (cf. *Linaria*) and the elongation of its stalk forces the young pod under ground, where it ripens.

Arachnanthe Blume (*Renanthera* p.p. *EP.*). Orchid. (II. 20). 10 S.E. As., Malaya.

Arachnites F. W. Schmidt = *Ophrys* L. (Orchid.).

Arachnitis Phil. Burmanniaceae. 1 Chili.

Arachnoid, cobweb-like.

Arachnopogon Berg. Inc. sed. Nomen.

Aracium Neck. = *Crepis* L. (Compos.).

Araeococcus Brongn. Bromeliaceae (4). 1 Guiana, N. Brazil.

Aragallus Neck. = *Astragalus* Tourn. (Legum.).

Aragoa H. B. et K. Scrophulariaceae (III. 1). 3 Andes.

Aralia Tourn. Araliaceae (2). 30 *. The r. of *A. (Panax) Ginseng* Baill. (*A. quinquefolia* auct.) yields the famous Chinese medicine ginseng. *A. papyrifera* Hook., see Fatsia.

Araliaceae (EP., BH.). Dicots. (Archichl. Umbelliflorae). 51 gen., 660 sp., chiefly trop. (esp. Indomal., trop. Am.). Usu. trees and shrubs, some with palm-like habit; many twine, some (e.g. *Hedera*) root-climbers. L. usu. alt., often large and cpd., with small stip. Fl. small, in umbels frequently massed into cpd. infls. Fl. ♂, reg., epig., usu. 5 (3—∞)-merous. K 5, very small, C 5, A 5, $\bar{G}$ (5), 5-loc., with 1 anat. pend. ov. in each, micropyle facing outwards; styles free or united. Usu. drupe with as many stones as cpls. Embryo small in rich endosp. (Placed in Umbellales by BH.)

Classification and chief genera (after Engler):

1. *Schefflereae* (P valvate): Fatsia, Hedera.

2. *Aralieae* (P ± imbr., sessile with broad base): Aralia, Panax.

3. *Mackinlayeae* (P valvate, shortly clawed): Mackinlaya.

Aralidium Miq. Araliaceae (2). 2 Malaya.

Araliopsis Engl. Rutaceae (IV). 1 Gaboon.

Ararocarpus Scheff. Anonaceae (4). 1 Java.

Arar wood, *Tetraclinis articulata* Masters.

Araucaria Juss. Coniferae (Pinaceae; see C. for gen. char.). 10 S. Am., N.Z., Polynesia, Austr., in two sections, In § 1 (Colymbea, l. broad, fr. cpls. not winged) *A. imbricata* Pav. (monkey-puzzle, Chili) with ed. seed, *A. brasiliana* A. Rich. (Brazilian pine, abundant in S. Brazil), *A. Bidwilli* Hook. (bunya-bunya pine, Queensland), and others. In § 2 (Eutacta, needle l., scales winged) *A. excelsa* R. Br. (Norfolk I. pine), *A. Cunninghamii* Ait. (Hoop pine, E. Austr.), and others. All have useful timber. Cult. orn. trees.

Araucariaceae = Pinaceae. ✓

Araujia Brot. Asclepiadaceae (II. 1). 6 Brazil, Arg.

Arborescens, arboreus (Lat.), tree-like.

Arboretum, collection of trees.

Arbor-judae, *Cercis Siliquastrum* L.; -vitae, *Thuja* spp.

Arbour-vine, Spanish (W.I.), *Ipomoea tuberosa* L.

Arbutus (Tourn.) L. Ericaceae (II. 3). 20 Medit., W. As., N. Am. Fr. a dry berry. *A. Menziesii* Pursh. (N. Am., madrona laurel) useful wood.

Arbutus, trailing (Am.), *Epigaea repens* L.

Arcangelisia Becc. Menispermaceae. 2 Malay Arch.

Arcanthobium Bieb. Loranthaceae (II). 10 *. Cf. *Ann. of Bot.* II. 137.

Archaeocarex Börner. Cyperaceae (III). 1 S. Afr.

Archangel, see next; **yellow-**, *Lamium Galeobdolon* Crantz.

Archangelica Hoff. (*Angelica* L. p.p. EP.). Umbellif. (III. 6). 10 N. temp. The petiole of *A. officinalis* Hoff. is eaten, and offic.

Archangiopteris Christ et Giesenh. Maratt. (I). 2 S.W. China, Formosa. L. once pinnate; sori linear, of 80—160 sporangia.

Archemora DC. = Peucedanum L. (BH.) = Tiedemannia DC. (Umbell.).

Archegoniatae. Those pl. in which the ♂ cell (archegonium) is contained

in an *archegonium*, a flask-shaped organ with neck of one layer of cells thick; includes Bryo- and Pteridophyta.

Archegonium, see last, and *Filicineae*, &c.

Archeria Hook. f. Epacridaceae (2). 5 Tasmania, N.Z.

Archesperium, *Pteridophyta*.

Archibaccharis Heering. Compositae (3). 2 Mex.

Archichlamydeae. A division of Dicots. (*cf.* classification at end).

Archidendron F. Muell. Leguminosae (1. 1). 10 trop. Austr., New Guin.

Archiphyllum Van Tiegh. (*Myzodendron* p.p. *EP.*). Santal. 3 temp. S. Am.

Archontophoenix H. Wendl. et Drude. Palmae (IV. 1). 3 E. Austr.

Archytaea Mart. Theaceae. 3 Brazil, Guiana, Malay Arch.

Arctagrostis Griseb. Gramineae (8). 2 arctic.

Arcteranthis Greene (*Oxygraphis* p.p. *EP.*; *Ranunculus* p.p. *BH.*).

Ranunculaceae (3). 1 N. Am.

Arcterica Coville (*Cassiope* p.p. *EP.*; *Andromeda* p.p. *BH.*). Ericac. (II. 1). 1 Behring Str.

Arctic plants, *cf.* Zones of Veg.; **zone**, above cult. limit.

Arctium L. Compositae (11). 4 palaeotemp. *A. Lappa* L. (burdock) Brit. The invol. br. become hooked and woody after the fl. wither, and by clinging to fur &c. aid in jerking out the fr.

Arctocrania Nakai (*Cornus* p.p.). Cornaceae. 2 N. temp.

Arctomecon Torr. et Frem. Papaveraceae (11). 3 Calif.

Arctophila Rupr. = *Poa* L. and *Colpodium* Trin. (Gramin.).

Arctopus L. Umbelliferae (11. 2). 3 S. Afr.

Arctostaphylos Adans. Ericaceae (11. 3). 30 N. temp. and arctic; 2 Brit. (bearberry); the fl. appear as soon as the snow melts. *A. pungens* H.B. et K. (manzanita, Calif.), orn. wood.

Arctotheca Wendl. (*Arctotis* p.p. *EP.*). Compositae (10). 1 S. Afr.

Arctotis L. Compositae (10). 65 trop. and S. Afr., Austr. Shows chars. of § 10 well.

Arctous Niedz. (*Arctostaphylos* p.p.). Eric. (11. 3). 1 N. circumpolar.

Arcuate, bow-like.

Arcynospermum Turcz. Malvaceae (inc. sed.). 1 Mex.

Arcythophyllum Willd. (*Mallostoma* *BH.*). Rubi. (1. 2). 15 trop. Am. Mts.

Ardisia Sw. Myrsinaceae (11). 260 warm countries. Fl. usu. ♂.

Ardisiandra Hook. f. Primulaceae. 1 W. trop. Afr. Mts.

Arduina Mill. (*Carissa* L.). Apocynaceae (1. 1). 20 palaeotrop.

Areca L. Palmae (IV). 15 Indomal. *A. Catechu* L. largely cult. in trop. As. for its seeds (Areca or Betel nuts). The infl. is below the oldest living l., monoec., with the ♀ fls. at the bases of the twigs, the ♂ above. The seed, about as big as a damson, is cut into slices and rolled up in a leaf of Betel pepper (*Piper Betle*) with a little lime. When chewed, it turns the saliva bright red; it acts as a stimulus upon the digestive organs, and is supposed by the natives (who use it habitually) to be a preventive of dysentery. *A. oleracea* Jacq. = *Oreodoxa* o.

Areca-nut, *Areca Catechu* L.

Arechavaletaia Spegazz. Flacourt. (7) (Samyd. *BH.*). 1 Uruguay.

Aregelia O. Ktze. (*Nidularium* Lam. p.p.). Bromel. (4). 20 trop. Am.
Aremonia Neck. (*Agrimonia* L. p.p. *BH.*). Ros. (III. 5). 1 S.E. Eur.

Arenaceous, arenarius (Lat.), growing in sandy places.

Arenaria Rupp. ex L. Caryophyllaceae (I. 1). 100 N. temp.; 8 Brit., incl. *A. (Honckenya) peploides* L. (sea-purslane), common on sandy coast, with long creeping underground stems with scale l., the green l. fleshy with water tissue. *A. Cherleria* Hook. (*Cherleria sedoides* L.) is a tufted alpine pl. of Scotland.

Arenga Labill. Palmae (IV. 1). 15 Malaya. Like Caryota, but spadix unisexual; sta. ∞ , cpls. 3. *A. saccharifera* Labill. (gomuti palm) cult. for sugar (jaggery), obtained by wounding the young infl. and evaporating the sap. A var. of sago is obtained from the pith by washing and granulating. The tree flowers when mature, infls. appearing in descending order till it dies. An excellent fibre is obtained from the leaf-sheaths.

Areole, Cactaceae.

Arethusa Gronov. Orchidaceae (II. 2). 4 Japan, Atl. N. Am.

Arethusantha Finet. Orchidaceae (II. 5). 1 trop. As.

Aretia Hall., L. (*Androsace* L. p.p.). Primul. 12 N. palaeotemp.

Aretiastrum DC. = *Valeriana* L. p.p. (Valer.).

Arfeuillea Pierre. Sapindaceae (II). 1 Siam.

Argan oil, cf. next.

Argania Roem. et Schult. Sapotaceae (I). 1 Morocco, *A. Sideroxylon* R. et S. The pressed seeds yield argan oil, used like olive oil; the timber is hard and durable; the fr. eaten by cattle.

Argemone Tourn. ex L. Papaveraceae (II). 12 trop. Am.

Argentate, argenteus (Lat.), silvery.

Argentina Lam. (*Potentilla* L. p.p.). Rosaceae (III. 2). 5 N. Am.

Argillaceus (Lat.), growing on clay.

Argithamnia Sw. Euphorbiaceae (A. II. 2). 8 S. Am., W. Ind.

Argomuelleria Pax. Euphorbiaceae (A. II. 2). 1 trop. Afr.

Argophyllum Forst. Saxifragaceae (V). 10 trop. Austr., New Cal.

Argostemma Wall. Rubiaceae (I. 2). 65 trop. As., Afr.

Argylia D. Don. Bignoniaceae (2). 12 Chili.

Argyranthemum Webb. = *Chrysanthemum* L. (Compos.).

Argyreia Lour. Convolvulaceae (I). 40 trop. As., Afr.

Argyrocalymma K. Schum. et Lauterb. Saxifragac. (V). 1 New Guinea.

Argyrocome Gaertn. = *Helipterum* DC. (Compos.).

Argyrolobium Eckl. et Zeyh. Leguminosae (III. 3). 60 Afr., Medit. to India. Mostly xero. Some have cleist. fl.

Argyrorchis Blume (*Macodes* Lindl. *EP.*). Orchid. (II. 2). 1 Java.

Argyrostachys Lopriore. Amarantaceae (3). 1 E. trop. Afr.

Argyroxiphium DC. Compositae (5). 2 Sandwich Is. Small trees.

Argythamnia P. Br. = *Argithamnia* Sw. (Euphorb.).

Aria Jacq. f. = *Pyrus* L. (Rosac.).

Aridarum Ridl. Araceae (V). 1 N. Borneo.

Arikuryroba Barb. Rodr. Palmae (IV. 2). 1 Brazil.

Aril, an extra coat to the seed, *Biophytum*, *Dillenia*, *Durio*, *Euonymus*, *Marantaceae*, *Myristica*, *Oxalis*, *Phyllocladus*, *Podocarpus*, *Taxus*,

Turneraceae; -late, with an aril; -lode, a false aril, not arising from the placenta.

Arillaria S. Kurz (*Ormosia* Jack, *BH.*). Legumin. (III. 1). 1 Burma.

Ariocarpus Scheidw. (*Mammillaria* p.p. *BH.*). Cact. (III. 2). 4 Mex.

Ariopsis J. Grah. Araceae (VI). 1 Indomal., *A. peltata* J. G., a small tuberous herb. The few ♀ fls. are at the base of the spadix, the ♂ above. This part is full of round holes leading into pear-shaped cavities surrounded each by a synandrium of 6-8 sta. The synandria are fused to each other so that the surface of the spadix is continuous from the opening of one fl. to that of the next.

Arisacontis Schott. Araceae (inc. sed.). 1 Radack I.

Arisaema Mart. Araceae (VII). 75 As., Abyss., N. Am. Like Arum, but dioec., said to be fert. by snails. The corm is known as Indian turnip.

Arisarum (Tourn.) Targ. Tozz. Araceae (VII). 3 Medit.

Aristate (dimin. *aristulate*), awned.

Aristega Miers. Menispermaceae. 1 Indomal.

Aristea Soland. ex Ait. Iridaceae (II). 30 S. and trop. Afr., Madag.

Aristida Linn. Gramineae (8). 160 temp. and sub-trop.

Aristobulia Mart. = *Andira* Lam. p.p. (Legum.).

Aristogeitonia Prain. Euphorbiaceae (A. 1. 1). 1 W. trop. Afr.

Aristolochia Tourn. Aristolochiaceae. 250 trop. and temp.; herbs with rhiz. or twining lianes. *A. Gigas* Lindl. (pelican flower) and others often cult. orn. fl. Many trop. sp. have a small l. surrounding the stem at the base of each ordinary l., and looking like a stip., but really the first l. of the axillary shoot, which grows very rapidly at first. In other cases this l. remains small and its shoot does not develop, so that it looks like an interpet. stip. In most several buds form in each axil; the fls. usu. come from the upper ones.

A. Clematitis L. (birthwort) an escape in Brit. P tubular, hooded at top, and enlarged below round the gynostemium; this has 6 sessile extr. anthers below and as many stigmatic lobes above (really not the true stigmas, but the connectives of the anthers, which have assumed stigmatic functions). The young fl. stands erect and its tube contains numerous hairs, jointed at the base so that they can easily be bent down but not up. No honey. Small flies enter the fl. at this stage and find the stigmas ripe, so that if they bear pollen from other fls. fert. takes place. They are unable to escape until in a day or two the pollen is shed, and the hairs wither, the fl. at the same time bending down (*cf.* Arum). In *A. Sipho* L'Hérit. (Dutchman's pipe) the P is bent like a siphon and has a polished interior surface.

Aristolochiaceae (*EP. BH.*). Dicots. (Archichl. Aristolochiales). 5 gen., 200 sp., trop. and warm temp., except Austr. Herbs or shrubs, the latter usu. twining lianes. L. alt., stalked, often cordate, usu. simple, exstip. Fl. ♀, epig., reg. or ♂. P usu. (3), petaloid; A 6—36, free, or united with the style into a gynostemium (*cf.* Asclepiads, Orchids, &c.). $\overline{G}$ 4—6-loc.; ov. ∞ in each loc., anatr., horiz. or pend. Caps. Embryo small in rich endosp. The A. are difficult to place in the system. They have been put near Dioscoreaceae, though not monocot. *BH.* place them in Multiovulatae Terrestres. *Chief genera*: Asarum, Aristolochia.

- Aristolochiales.** The 15th order of Dicot. Archichl.
- Aristotelia** L'Hérit. Elaeocarpaceae. 10 S. temp.
- Arjona** Comm. ex Cav. Santalaceae. 9 temp. S. Am.
- Armed**, thorny.
- Armeniaca** Tourn. ex Mill. = *Prunus* Tourn. (Rosac.).
- Armeria** Linn. Plumbaginaceae. 60 N. temp. and andine. *A. vulgaris* Willd. (thrift, sea pink) common on the coast of Brit. and in high mountain regions of Scotland, a fairly frequent phenomenon, due perhaps to similarity of conditions. Primary root perennial; each year's shoot dies down all but a short piece, on which the following year's shoot arises as an axillary branch. Infl. a capitulum of cincinni, surrounded by a whorl of bracts, the outer forming a sheath round the top of the peduncle. After fert. the K becomes a membranous funnel-like organ aiding seed-distribution by wind.
- Armoracia** Gaertn. = *Cochlearia* L. and *Nasturtium* R. Br. (Cruc.).
- Arnatto, arnotto**, *Bixa Orellana* L.
- Arnebia** Forsk. Boraginaceae (IV 4). 12 Medit., trop. Afr., Himal. Some have black spots on the C, which fade as it grows older (see fam., and cf. *Diervilla*, *Fumaria*, &c.).
- Arnica** Rupp. ex L. Compositae (8). 50 N. temp. and arctic. Tincture of arnica is prepared from all parts of the pl.
- Arnicastrum** Greenman. Compositae (6). 1 Mex.
- Arnocrinum** Endl. et Lehm. Liliaceae (III). 3°S.W. Austr.
- Arnoseris** Gaertn. Compositae (13). 1, *A. pusilla* Gaertn., Eur. (incl. Brit.). The bases of the invol. brs. enclose the ripe fr. (cf. *Rhagadiolus*).
- Arnottia** A. Rich. Orchidaceae (II. 1). 2 Mauritius.
- Aroideae** (BH.) = Araceae.
- Arodendron** Werth. (*Typhonodorum* p.p.). Araceae (v). 1 Zanzibar.
- Aronia** Pers. = *Amelanchier* Lindl. (Rosac.).
- Aronicum** Neck. = *Doronicum* L. p.p. (Compos.).
- Arpophyllum** Llave et Lex. Orchidaceae (II. 6). 6 C. Am., W.I.
- Arrabidaea** DC. Bignoniaceae (1). 100 S. Am.
- Arracacia** Bancroft. Umbelliferae (III. 4). 45 Peru to Mex. *A. xanthorrhiza* Bauer and others cult. ed. tuberous r.
- Arrack**, cf. *Borassus*, *Cocos*, &c.
- Arrhenatherum** Beauv. Gramineae (9). 3 Eur., Medit. *A. avenaceum* Beauv. (false oat-grass, French rye-grass), Brit.
- Arrhostoxylum** Mart. = *Ruellia* L. p.p. (Acanth.).
- Arrow-grass**, *Triglochin*; -head, *Sagittaria sagittifolia* L.
- Arrowroot**, a pure starch obtained from various pl.; **Bermuda-**, **W. Indian-**, *Maranta arundinacea* L.; **Brazilian-**, *Manihot utilisima* Pohl.; **E. Indian-**, *Curcuma angustifolia* Roxb., *Tacca pinnatifida* Forst. &c.; **Portland-**, *Arum maculatum* L. Cf. *Canna*, *Zea*, &c.
- Arrowsmithia** DC. Compositae (4). 1 S. Afr.
- Arsenococcus** Small (*Vaccinium* p.p.). Eric. (III. 1). 1 Atl. U.S.
- Artabotrys** R. Br. Anonaceae (4). 23 palaeotrop. Some cult. for sweetly scented fl. and ed. fr. They usually climb by aid of recurved hooks, which are modified infl. axes, and thicken and lignify when they clasp.
- Artanema** D. Don. Scrophulariaceae (II. 6). 4 Indomal.

Artanthe Miq. = *Piper* L. (Piper.).

Artemisia L. Umbelliferae (III. 8). 1 W. As.

Artemisia Linn. Compositae (7). 260 *, common on the arid soil of the western U.S., the Steppes, &c. 4 Brit. (wormwood). *A. tridentata* Nutt. and others form the $\pm$ halophytic 'sage-brush' of the S.W. U.S. Fl.-heads small, inconspic., and *wind* fert. (cf. *Poterium*, *Rheum* and *Rumex*, *Plantago*, *Thalictrum*, &c.). In *A. vulgaris* L. the marginal florets ♀, the rest ♂. Head pend.; the anther-tube projects beyond the C so that the dry powdery pollen is exposed to the wind. On the tips of the anthers are long bristles which together form a temporary pollen-holder. Afterwards the style emerges and the large hairy stigmas spread out. An interesting case of reacquisition of a character not found in most higher flowering pl. *A. Abrotanum* L. (old man, southernwood), and others, cult. orn. fl. The flavouring matter of absinth is derived from wormwood.

Artemisiopsis Sp. Moore. Compositae (4). 1 Nyassaland.

Arthraerua Schinz. Amarantaceae (2). 1 S.W. Afr.

Arthratherum Beauv. = *Aristida* L. p.p. (Gramin.).

Arthraxon Beauv. Gramineae (2). 15 palaeotrop., E. As.

Arthrocarpum Balf. f. (*Ornithocarpum* EP.). Legumin. (III. 7). 1 Socotra.

Arthroclianthus Baill. Leguminosae (III. 7). 6 New Cal.

Arthrocnemum Moq.* Chenopodiaceae (A). 8 coasts |*.

Arthrolobium Reichb. = *Ornithopus* L. and *Scorpiurus* L.

Arthrophyllum Blume. Araliaceae (1). 10 Indomal.

Arthrophytum Schrenk. Chenopodiaceae (B). 1 W. As.

Arthropodium R. Br. Lili. (III). 8 Austr., N.Z., New Cal. Cult. orn. fl.

Arthropogon Nees. Gramineae (4). 2 Brazil, Cuba.

Arthropteris J. Sm. Polypodiaceae. 4 trop. and subtrop.

Arthrosolen C. A. Mey. (*Gnidia* L. p.p. EP.). Thymel. 12 trop. and S. Afr.

Arthrostema Ruiz et Pav. Melastomac. (1). 12 Cuba, W. trop. Am.

Arthrostylidium Rupr. Gramin. (13). 16 trop. Am., W.I. Climbing.

Arthrostylis R. Br. Cyperaceae (11). 1 Austr.

Arthrotaxis Endl. = *Athrotaxis* D. Don (Conif.).

Arthrothamnus Klotzsch et Garke = *Euphorbia* L. p.p. (Euph.).

Artichoke, *Cynara Scolymus* L.; **Jerusalem-**, *Helianthus tuberosus*.

Articulate (l.), cut off by an absciss layer.

Articulated, jointed.

Artillery plant, *Pilea*.

Artocarpus Forst. Moraceae (II). 60 Indomal., China. Many show good bud-protection by stips. *A. laciniata* Hort. has large drip-tips (*Acer*, *Ficus*). Fls. monoec., the ♂ in pseudo-catkins, the ♀ in pseudo-heads. A multiple fr. is formed, the achenes being surrounded by the fleshy P and the common receptacle also becoming fleshy. The fr. contains much starch &c. and is a valuable food-stuff. Several sp. are cult. all over the trop., e.g. *A. incisa* L. (bread-fruit) and *A. integrifolia* L. (jak). The flesh has somewhat the texture of bread and is often roasted. The best cult. forms (cf. pear, banana, &c.) produce no seeds. The jak and others are caulifloral. Timber useful.

Artrolobium Desv. = *Coronilla* L., *Ornithopus* L., &c. (Legum.).

Arum (Tourn.) Linn. Araceae (VII). 15 Eur., Medit. *A. maculatum* L. (cuckoo-pint, wake-robin, lords and ladies, Brit.) is a perenn. tuberous pl. with monoec. fls.; ♀ fls. at base of spadix (each of 1 cpl., naked) and ♂ above (each of 2—4 sta.), and above these again rudimentary ♂ fls. repres. by hairs which project and close the mouth of the spathe. The foetid smell attracts flies, which enter the spathe, find the stigmas ripe, and are kept prisoners till the pollen is shed; then the hairs wither and escape is possible (cf. *Aristolochia*). Fr. a berry. The starch of the tubers was formerly used as food under the name Portland arrowroot, but it is difficult to get rid of the poisonous juices accompanying it. Other sp. are similarly used in Eur.

Arum lily, *Richardia africana* Kunth.

Aruncus Adans. Rosaceae (I. 1). 6 N. temp.

Arundina Blume. Orchidaceae (II. 4). 8 S.E. As., Malay Arch.

Arundinaceous, reed-like.

Arundinaria Michx. Gramineae (13). 45 As., Am. Bamboos (*q.v.*).

Arundinella Raddi. Gramineae (4). 45 trop.

Arundo Tourn. Gramineae (10). 12 trop. and temp. *A. Phragmites* L. (Brit.) = *P. communis*. The stems of *A. Donax* L. are used for sticks, fishing-rods, &c.

Arvensis (Lat.), of arable land.

Arytera Blume (*Ratonia* DC. p.p. *BH.*). Sapind. (1). 20 E. As., Austr.

Asaemia Harv. Compositae (7). 1 S. Afr.

Asafoetida, *Ferula Narthex* Boiss., *F. Assafoetida* L., &c.

Asagraea Baill. (*Dalea* L. p.p. *BH.*). Leguminosae (III. 6). 2 N. Am.

Asarabacca, *Asarum europaeum* L.

Asarca Poepp. ex Lindl. = *Chloraea* Lindl. (Orchid.).

Asarum (Tourn.) L. Aristolochiaceae. 30 N. temp. *A. europaeum* L. (asarabacca), an escape in Brit. (formerly medic.). Rhiz. below ground and creeping shoots above; the latter are sympodial, each annual joint bearing several scale l. below, then two green l. and a terminal fl. Fl. reg.; P (3), sometimes with 3 small teeth between the segments (perhaps remnants of a former inner whorl); A 12; G (6). The dark-brown, resinously scented fl. is visited by flies, and is very protog.; when the stigmas are ripe the sta. are all bent away, but later on they move up to the centre and dehisce extr. The P lobes are bent in at first towards the centre of the fl. and form a sort of prison of it, but afterwards gradually straighten.

Ascarina Forst. Chloranthaceae. 6 Polynesia.

Ascending (aestivation), cf. Aest.; (ovule), sloping upwards; (stem), *do.*

-ascens (Lat. suffix), tending towards.

Aschamia Salisb. = *Hippeastrum* Herb. p.p. (Amaryllid.).

Aschenbornia Schauer. Compositae (2). 1 Mex.

Aschersoniodoxa Gilg et Muschler (*Draba* p.p.). Cruc. (4). 1 Ecuador.

Asciadium Griseb. Umbelliferae (inc. sed.). 1 Cuba.

Ascidium, a pitcher.

Asclepiadaceae (*EP. BH.*). Dicots. (Sympet. Contortae). 220 gen., 1700 sp., mostly trop. (esp. Afr.), but a few temp. In veg. habit like Apocynaceae; some perenn. herbs, but most are climbing shrubs

or lianes, with simple, entire, opp., exstip. l. Latex is present. Many, esp. S. Afr. sp., xero.; some, *e.g.* *Periploca*, with much reduced l., others, *e.g.* *Hoya*, and still more, *Stapelia*, with fleshy stems. Epiphytes also occur; *cf.* esp. *Dischidia*.

Infl. usu. of many fls. and cymose or racemose (raceme or umbel). In the former case it is dich., but as in *Caryophyll.* the one branch tends to outgrow the other, and a monoch. (cincinnus) may arise in later branchings. When infl. axillary, there is usu. only one at each node; in the axil of the other l. there is a veg. shoot, or nothing. In some gen. (*cf.* *Asclepias*) the infl. is extra-axillary.

Fl. ♂, reg., 5-merous, usu. small. K 5, quincuncial, the odd sep. post.; C (5) usu. rotate or campanulate, with conv. or valvate aestivation. The essential organs (5 sta., 2 cpls.) are complex. The sta. and style are usu. united to form a *gynostegium*. The cpls. are free below as in *Apocyn.*, but united at the tip with a common style; ov. sup. The head of the style is large and variously shaped, and the stigmatic surface is usually upon the edge or under side of it. To its margin are united the anthers of the 5 epipet. sta.; the filaments of these are short or non-existent. The pollen in § 1 is united merely in tetrads, in the higher group, comprising the bulk of the order, into pollinia, as in *Orchids*. Usu. each anther contains two. In this group also there are curtain-like projections at the sides of the anthers, leaving a narrow slit between each pair of anthers.

The pollen is removed from the anthers by a curious mechanism—the *translator*. This differs in the two suborders and so also does the fert. method. The translator always stands between two anthers and serves to carry away half the pollen from each of them. In the *Periplocoideae* it is a spoon- or funnel-like body with a sticky disc at the narrow end. Into it is shed the pollen from the two half anthers next to it, and as the sticky disc projects outwards in the male stage of the flower an insect will be likely to get it attached to its head, and carry it about like the pollinia of an orchid. In visiting a second flower the pollen may be placed on the stigmatic surface. In the *Cynanchoideae*, on the other hand, there are pollinia, and the translator has a different structure. It forms an inverted λ -shaped organ, the foot of the Y being formed by the adhesive body (*corpusculum*); from this diverge the threads (*retinacula*) which are attached to the pollinia, one in each anther. An insect in obtaining honey catches its leg in the slit between the anthers, and in drawing it up removes the pair of pollinia. The threads as they dry contract on the inner side till the pollinia meet, thus closely clasping the insect's leg. In drawing the leg through a similar slit in another fl. the pollinia catch on the stigmatic under-surface of the stylar head. (Cf. *Apocynum*, which shows an approach to this mech.)

The backs of the anthers as a rule bear appendages (*cuculli*) forming a *corona*. In some cases it springs from the C. It may consist of small teeth, or be more complex, as in *Asclepias* and *Ceropegia*, and often takes up the functions of secreting and storing the honey.

$\underline{G}$ (2), 2-loc., with ∞ anatr. ov. pend. from the ventral plac. Fr. a pair of follicles; seeds usu. crowned by a tuft of hairs for wind-

carriage. Endosperm slight, cartilaginous. Some give useful fibres.

Closely related to Apocyn., the only absolute distinction being the presence of translators in Ascl.; otherwise the two sub-orders of each form a corresponding series, and the lower one in each is almost as nearly related to the corresponding one in the other order as to the higher group in its own order. Placed in Gentianales by *BH.*

Classification and chief genera (after K. Schumann):

I. *PERIPLOCOIDEAE* (pollen in tetrads; translator spoon-like).

1. *Periploceae*: Streptocaulon, Periploca.

II. *CYNANCHOIDEAE* (pollinia; corpusculum, &c.).

1. *Asclepiadeae* (pollinia pendulous on threads): Asclepias, Calotropis, Cynanchum.

2. *Secamoneae* (pollinia erect or horizontal, 4 in each anther): Secamone (only genus).

3. *Tylophoreae* (do. but 2 in each, erect): Ceropegia, Stapelia, Stephanotis, Hoya.

4. *Gonolobeae* (do. but 2 in each, horiz.): Gonolobus.

Asclepias L. Asclepiad. (II. 1). 160 Am., Afr., esp. U.S. (silk-weeds). Herbs with umbellate infls. which spring from the stem between the petioles of the opp. l. (*cf.* Cuphea), or above or below this. Two explanations exist, but which is right the evidence available does not show. Either the infl. is axillary to the l. below it and is 'adnate' to the stem (*cf.* Cuphea), or it is the termination of a shoot, and the stem is really a sympodium.

The cuculli of the anthers form little pockets, into which honey is poured by the horn-like nectaries that project from them. Insects walking over the fl. and sipping honey frequently slip their legs down the sides of the gynostegium, and in drawing them up catch in the slit between two anthers and remove the pollinia (*cf.* family). The process may be watched on *A. Cornuti* Decne. in gardens.

Asclepiodora A. Gray (*Asclepias* p.p. *EP.*). Asclep. (II. 1). 2 N. Am.

Ascocentrum Schlechter. Orchidaceae (II. 20). 4 New Guinea.

Ascochilus Ridl. Orchidaceae (II. 20). 4 Malay Penins.

Ascoglossum Schlechter. Orchidaceae (II. 17). 1 New Guinea.

Ascolepis Nees. Cyperaceae (I). 10 warm Afr., Am.

Ascotainia Ridl. (*Tainia* p.p.). Orchid. (II. 7). 2 Malay Penins.

Ascyrum L. Guttiferae (II). 5 N. Am., W.I., Himalaya.

Asemnantha Hook. f. Rubiaceae (II. 3). 1 Yucatan.

Aseptate, without partitions.

Asexual, sexless; **-generation**, *Pteridophyta*.

Ash, *Fraxinus excelsior* L.; **mountain-**, *Pyrus Aucuparia* Ehrh.; **prickly-**, *Zanthoxylum fraxineum* Willd.; **-pumpkin**, *Benincasa cerifera* Savi.

Asimina Adans. Anonaceae (2). 6 E. U.S. *A. triloba* Dun. (papaw) has ed. fr.

Askidiosperma Steud. Restionaceae. 1 S. Afr.

Aspalathus L. Leguminosae (III. 3). 160 S. Afr. Many are xero. with a heath-like habit.

Asparagopsis Kunth = *Asparagus* Tourn. p.p. (Lili.).

Asparagus Tourn. (incl. *Myrsiphyllum* Willd.). Liliaceae (VII). 120 |*, mostly in dry places. Rhiz. with aerial shoots; l. reduced to scales with linear green shoots in axils, usu. stem in tufts. These are small condensed cymes, of the type 1 shown in the diagram (figs. represent the branches of successive orders). The number of shoots that develop 2 2 varies. In the infl. the same construction holds, the shoots 3 3 2, 2 bearing the fls. In the sub-genus M. there are flat 4 4 leaf phylloclades (cf. *Ruscus*). Fr. a berry. *A. officinalis* L. cult., the young shoots being eaten.

Aspasia Lindl. Orchidaceae (II. 19). 8 trop. Am.

Aspen, *Populus tremula* L.

Asper (Lat.), rough; **-ifolius** (Lat.), rough-leaved.

Asperella Humb. Gramineae (12). 2 As. (BH.), 4 N. Am., N. As., N.Z. (EP.).

Asperifoliae = Boraginaceae.

Aspermous, seedless.

Asperugo (Tourn.) L. Boraginaceae (IV. 2). 1 Eur., As.

Asperula L. Rubiaceae (II. 11). 80 Eur., As., Austr., esp. Medit. *A. odorata* L. (woodruff) and *A. cynanchica* L. (squincancy-wort), Brit. Fls. homogamous; fr. of woodruff hooked.

Asphodel, *Asphodelus*; **bog-**, *Narthecium ossifragum* Huds.; **Scottish-**, *Tofieldia palustris* Huds.

Asphodeline Rchb. Liliaceae (III). 15 Medit.

Asphodelus (Tourn.) L. Liliaceae (III). 12 Medit. (asphodel). L. isobil.; fls. protog.

Aspicarpa Rich. Malpighiaceae (I). 5 Texas to Argentina.

Aspidandra Hassk. Euphorbiaceae (inc. sed.). 1 Java.

Aspidistra Ker-Gawl. Liliaceae (VII). 5 E. As. The large flat style forms a lid to the cavity made by the 8 P-leaves. Cult. orn. fl.

Aspidium Sw. *Synonymy*: *A. aemulum* Sw., *cristatum* Sw., *dilatatum* Willd., *Filix-mas* Sw., *Oreopteris* Sw., *rigidum* Sw., *spinulosum* Sw., *Thelypteris* Sw. = *Dryopteris* (same spec. names); *A. Filix-foemina* Sw. = *Athyrium* F.-f.

Polypodiaceae, 200 cosmop. *A. aculeatum* Sw. (prickly shield-fern) and *A. Lonchitis* Sw. (holly-fern) in Brit.

Aspidixia Van Tieghem (*Viscum* p.p.). Loranthac. (II). 10 palaeotrop.

Aspidocarya Hook. f. et Thoms. Menispermaceae. 5 Indomal.

Aspidopterys A. Juss. Malpighiaceae (I). 20 trop. As.

Aspidosperma Mart. et Zucc. Apocynac. (I. 3). 50 trop. and S. Am., W.I. Wood useful; bark (quebracha) used for tanning.

Aspilina Thou. Compositae (5). 90 Brazil to Madagascar.

Aspiliopsis Greenman. Compositae (5). 1 Mex.

Aspleniopsis Mett. Polypodiaceae. 1 Melanesia.

Asplenium L. Polypodiaceae. 540 cosmop.; 11 in Brit., including *A. Filix-foemina* Bernh. (lady-fern), *A. Ruta-muraria* L. (wall-spleenwort), *A. Trichomanes* L. (spleenwort) and *A. Adiantum-nigrum* (black spleenwort). The var. *clarissima* of the lady-fern shows apogamy (see Filicineae, Lepto.). *A. bulbiferum* Forst. and other sp. are 'viviparous,' producing young plants on their leaves by vegetative budding (not to be confounded with apospory). *A. Nidus*

L. (the bird's nest fern) is an interesting epiphyte of the Old World tropics. It bears a rosette of leaves forming a nest in which humus collects; the roots ramify in this and obtain food and water. *A. rhizophyllum* Kunze is the walking fern, so called because the leaf-tips when they touch the soil bud into new individuals, and thus the plant spreads to some distance.

Asprella Schreb. = *Leersia* Sw. (Gramin.).

Assai palm, *Euterpe edulis* Mart.

Assegai wood, *Curtisia faginea* Ait.

Associations, plant, the grouping of pl. which occupies any definite uniform area and kind of land.

Assurgent, ascending.

Astartea DC. (*Baekea* L. p.p.). Myrtaceae (II. 1). 5 Austr.

Astelia Banks et Soland. Liliaceae (VI). 15 Polynes. Dioec. Cult. orn. fl.

Astelma R. Br. = *Helichrysum*, *Helipterum* (Compos.).

Astelma Schlecht. Asclepiadaceae (II. 3). 1 New Guinea.

Astemma Less. Compositae (5). 1 Ecuador.

Astemon Regel. Labiatae (inc. sed.). 1 S. Am.

Astephania Oliv. Compositae (4). 2 E. Afr.

Astephanocarpa Baker. Compositae (4). 1 Madag.

Astephanus R. Br. Asclepiad. (II. 1). 12 Madag., trop. Afr., warm Am.

Aster Tourn. ex L. Compositae (3). 400 Am., As., Afr., Eur.; 2 on Brit. coast (Michaelmas daisy), somewhat fleshy halophytes. Style sta. typical of § 3. The China aster of gardens (*A. chinensis* L.) is a *Callistephus*. Many cult. orn. fl.

Aster, China, *Callistephus hortensis* Cass.

Asteracantha Nees (*Hygrophila* BH.). Acanth. (IV. A). 1 palaeotrop.

Asteraceae = Compositae.

Asterales (BH.). The 2nd cohort of Dicotyledons (Gamopet.).

Asteranthe Engl. et Diels (*Asteranthopsis*). Anon. (1). 1 Zanzibar.

Asteranthera Hanst. Gesneriaceae (1). 1 Chili.

Asteranthopsis O. Ktze. Anonaceae (1). 1 Zanzibar.

Asteranthus Desf. Lecythidaceae. 1 Venezuela, N. Brazil.

Asteriastigma Bedd. (*Hydnocarpus* p.p. EP.). Flacourt. (3). 1 India.

Asteriscium Cham. et Schlecht. Umbelliferae (1. 2). 27 Mex., S. Am.

Asteriscus Moench = *Odontospermum* Neck. (Comp.).

Asterocephalus (Vaill.) Adans. = *Scabiosa* L. p.p. (Dipsac.).

Asterochaete Nees. Cyperaceae (II). 4 Masc., S. Afr.

Asterochlaena Garcke = *Pavonia* Cav. (Malv.).

Asterogyne H. Wendl. Palmaceae (IV. 1). 2 C. Am.

Asteroid, star-shaped.

Asterolasia F. Muell. Rutaceae (1). 7 Austr.

Asterolinon Hoffmannsegg et Link. Primulaceae. 2 Medit., Abyss.

Asteromaea Blume (*Bottonia* BH.). Compositae (3). 3 E. As.

Asteropeia Thou. Theaceae (Samyd. BH.). 5 Madag.

Asterophorum Sprague. Tiliaceae. 1 Ecuador.

Asteropsis Less. (*Podocoma* Cass. BH.). Compositae (3). 1 S. Brazil.

Asterostemma Decne. Asclepiadaceae (II. 3). 1 Java.

Asterostigma Fisch. et Mey. (*Staurostigma* BH.). Arac. (VII). 5 Brazil.

Asthenochloa Buese. Gramineae (inc. sed.). 1 Java.

- Astianthus** D. Don (*Tecoma* Juss. p.p. *BH.*). Bignon. (2). 1 C. Am., Mex.
- Astichous**, not in rows.
- Astilbe** Buch.-Ham. Saxifragaceae (1). 20 As., N. Am.
- Astiria** Lindl. Sterculiaceae. 1 Masc.
- Astoma** DC. Umbelliferae (III. 4). 1 Palestine.
- Astragalus** Tourn. ex L. Leguminosae (III. 6). 1600 cosmop. exc. Austr.; 3 Brit. (milk-vetch). Usu. on steppes, prairies, &c. and $\pm$ xero. often thorny; the thorns commonly form by the stiffening of the petiole or midrib of the l. when the blade falls off. *A. gummifer* Labill. and others yield gum-tragacanth, obtained by wounding the stem; the gum exudes and hardens.
- Astrantia** (Tourn.) L. Umbelliferae (II. 1). 5 Eur., As.
- Astrebla** F. Muell. Gramineae (II. 1). 3 Austr.
- Astrephia** Dufresne. Valerianaceae. 4 Chili.
- Astrocalyx** Merrill. Melastomaceae (II). 1 Phil. Is.
- Astrocaryum** Neck. Resedaceae. 2 S.W. Eur.
- Astrocaryum** G. F. W. Mey. Palmae (IV. 2). 40 trop. Am. Several yield fibre and oil, or are cult. as decorative.
- Astrocasia** Robinson et Millspaugh. Euphorb. (A. 1. 1). 1 C. Am.
- Astrochlaena** Hallier f. Convolvulaceae (1). 20 Afr.
- Astrococcus** Benth. Euphorbiaceae (A. II. 2). 2 Brazil.
- Astrodaucus** Drude (*Daucus* p.p.). Umbelliferae (III. 2). 4 Medit.
- Astroloma** R. Br. (*Styphelia* p.p. *EP.*). Epacridaceae. 25 Austr.
- Astronia** Noronha. Melastomaceae (II). 30 Malay Arch., Polynes.
- Astronium** Jacq. Anacardiaceae (3). 10 S. Am. Hard wood.
- Astrophiolate**, with no strophiole.
- Astrophyllum** Torr. et Gray. Rutaceae (1). 1 Mex., S.W. U.S.
- Astrostemma** Benth. Asclepiadaceae (II. 1). 1 Borneo.
- Astrothalamus** C. B. Robinson. Urticaceae (3). 1 Phil. Is.
- Astrotheca** Miers (*Clusia* L. p.p. *BH.*). Guttiferae (v). 1 Brazil.
- Astrotricha** DC. Araliaceae (1). 6 Austr.
- Astydamia** DC. Umbelliferae (III. 6). 1 Canaries.
- Asymmetrical** (fl.), with no plane of symmetry, *Canna*, *Marantaceae*, *Valerianaceae*; (l.), divided into unequal parts by midrib, *Begonia*, *Ulmaceae*.
- Asystasia** Blume. Acanthaceae (IV. B). 30 palaeotrop.
- Asystasiella** Lindau. Acanthaceae (IV. B). 3 trop. As, Afr.
- Ataenidia** Gagnep. Marantaceae. 1 Gaboon.
- Atalantia** Correa. Rutaceae (v). 18 trop. As., China, Austr.
- Atalaya** Blume. Sapindaceae (1). 5 Austr., Malay Arch.
- Atamasco** Raf. = *Zephyranthes* Herb. (*BH.*) = *Amaryllis* L.
- Atamisquea** Miers. Capparidaceae (II). 1 Chili, Arg.
- Atamosco**, *Zephyranthes texana* Herb.
- Atavism**, cf. Reversion to type.
- Atelandra** Bello (*Meliosma* Blume *EP.*). Sabiaceae [*Myrsinaceae* (*BH.*)]. 2 Porto Rico.
- Atelanthera** Hook. f. et Thoms. Cruciferae (4). 1 W. Tibet.
- Ateleia** Moc. et Sesse. Leguminosae (III. 1). 4 trop. Am., W.I.
- Atelophragma** Rydb. (*Astragalus* p.p.). Legumin. (III. 6). 6 N. Am.
- Ater** (Lat.), black.

- Ateramnus** P. Br. Inc. sed. Jamaica. Nomen delendum.
- Athamanta** L. Umbelliferae (III. 5). 10 Medit.
- Athanasia** L. Compositae (7). 50 S. and trop. Afr., Madag.
- Athenaea** Sendtn. Solanaceae (2). 15 trop. Am.
- Atherandra** Decne. Asclepiadaceae (1). 3 Malaya.
- Atheranthera** Mast. Passifloraceae. 1 Angola.
- Atherolepsis** Hook. f. Asclepiadaceae (1). 2 Burma.
- Atheropogon** Muhl. ex Willd. = *Bouteloua* Lag. p.p. (Gramin.).
- Atherosperma** Labill. Monimiaceae. 2 Victoria, Tasmania. The strongly scented bark is sometimes used as a tea.
- Atherostemon** Blume. Asclepiadaceae (1). 1 Burma, Malaya.
- Athrixia** Ker-Gawl. Compositae (4). 20 Austr., Afr.
- Athroisma** DC. Compositae (4). 1 E. Indomal.
- Athroostachys** Benth. Gramineae (13). 1 Brazil. Climbing.
- Athrotaxis** D. Don. Coniferae (Pinaceae; see C. for gen. char.). 4 Tasmania, Austr.
- Athyana** Radlk. Sapindaceae (1). 1 Arg., Paraguay.
- Athyrium** Roth. Polypodiaceae. 120 cosmop. *A. Filix-femina* Roth. (lady fern) Brit.
- Athyrocarpus** Schlecht. (*Phaeospherion* EP.). Commel. 3 trop. Am.
- Athysanus** Greene. Cruciferae (4). 2 Calif.
- Atlantic cedar**, *Cedrus atlantica* Manetti.
- Atomostigma** O. Ktze. Rosaceae (VI). 1 Matto Grosso.
- Atractocarpa** Franchet. Gramineae (13). 1 Congo.
- Atractocarpus** Schlechter et Krause. Rubiaceae (I. 8). 1 New Cal.
- Atractogyne** Pierre. Rubiaceae (I. 8). 1 trop. Afr.
- Atractylis** L. Compositae (II. 1). 20 Medit. to Japan.
- Atragene** L. = *Clematis* L. (Ranunc.). ✓
- Atraphaxis** L. Polygonaceae (II. 1). 18 C. As., N. Afr., Greece.
- Atratus** (Lat.), blackened.
- Atrichoseris** A. Gray. Compositae (13). 1 Calif.
- Atriplex** (Tourn.) L. Chenopodiaceae (A). 180 temp. and subtrop.; 6 Brit. (orache). Fls. unisexual or polyg., naked or with P.
- Atro-** (Lat. pref.), black; **-purpureus**, dark purple; **-virens**, dark green.
- Atropa** L. Solanaceae (2). 2 Eur., Medit., As. *A. Belladonna* L. (deadly nightshade) contains the alkaloid atropin, the basis of the drug belladonna used in medicine.
- Atropanthe** Pascher (*Scopolia* p.p.). Solanaceae (2). 1 China.
- Atropin**, *Atropa Belladonna* L.
- Atropis** Rupr. (*Glyceria* R. Br. BH). Gramineae (10). 30 temp.
- Atropous** (ovule), in a line with funicle.
- Atroxima** Stapf. Polygalaceae. 4 trop. Afr.
- Atrutegia** Bedd. (*Goniothalamus* Bl. EP.). Anonac. (2). 1 S. India.
- Attalea** H. B. et K. Palmae (IV. 2). 30 S. Am., W. I., trop. Afr. *A. funifera* Mart (Brazil) yields Bahia Piassaba fibre (*Kew Bull.* 1889, p. 237). *A. Cohune* Mart. (Honduras) yields the ivory-like Cohune nuts.
- Attar of roses**, *Rosa*, Pelargonium.
- Attenuate**, tapering.
- atus** (Lat. suffix), provided with.

- Atylosia** Wight et Arn. (*Cantharospermum* W. et A. pp. *EP.*). Leguminosae (III. 10). 20 trop. As., Austr., Madag., Mascarenes.
- Aubergine**, *Solanum Melongena* L.
- Aubletella** Pierre (*Chrysophyllum* L. p.p.). Sapotac. (I). 1 Guiana.
- Aubrietia** Adans. Cruciferae (4). 15 Medit. Mts.
- Aubrya** Baill. (*Saccoglottis EP.*). Humiriac. 10 S. Am., trop. Afr.
- Auzoumea** Pierre. Burseraceae. 1 Gaboon. Yields resin.
- Aucuba** Thunb. Cornaceae. 3 Himal. to Japan. *A. japonica* Thunb. (Japan laurel) cult. orn. shrub; it is dioecious.
- Aucubaephyllum** Ahlburg (*Grunilea* p.p. *EP.*). Cornaceae. 1 Japan.
- Audibertia** Benth. (*Ramona* Greene). Labiat. (VI). 10 N. Am.
- Audibertiella** Briq. Labiatae (VI). 10 Calif.
- Audouinia** Brongn. Bruniaceae. 1 S. Afr.
- Augea** Thunb. Zygophyllaceae. 1 S. Afr.
- Augia** Lour. Inc. sed. 1 China.
- Augusta** Leandr. = *Stiffia* Mikan. (Compos.).
- Augusta** Pohl (*Ucriana* Spreng.). Rubiaceae (I. 3). 1 E. Brazil.
- Aulacocalyx** Hook. f. Rubiaceae (II. 1). 4 trop. Afr.
- Aulacocarpus** Berg. Myrtaceae (I). 2 Brazil.
- Aulacodiscus** Hook. f. (*Pleiocarpidia*). Rubiaceae (I. 7). 1 Malay Pen.
- Aulacolepis** Hackel. Gramineae (8). 1 Japan.
- Aulacorhynchus** Nees. Cyperaceae (inc. sed.). 1 S. Afr.
- Aulax** Berg. Proteaceae (I). 2 Mts. S. Afr.
- Aulaya** Harv. = *Harveya* Hook. (Scrophular.).
- Aulisconema** Hua (*Disporopsis* p.p.). Liliaceae (VII). 2 China.
- Aulojusticia** Lindau. Acanthaceae (IV B.). 1 S. Afr.
- Aulomyrcia** Berg. = *Myrcia* DC. p.p. (Myrtac.).
- Aulospermum** Coulter et Rose (*Cymopterus* p.p.). Umb. (III. 6). 12 N. Am.
- Aulostephanus** Schlechter. Asclepiad. (II. 3). 1 Natal.
- Aulostylis** Schlechter. Orchidaceae (II. 9). 1 New Guinea.
- Aulotandra** Gagnep. Zingiber. (I). 2 Madag., trop. Afr.
- Aurantium** Tourn. ex Mill. = *Citrus* L. (Rutac.).
- Aureus** (Lat.), golden.
- Auricled** (l.), with two lobes overlapping stem.
- Auricula**, *Primula Auricula* L.
- Auricula** Tourn. ex Spach = *Primula* Tourn.
- Aurila** Noronha. Inc. sed. Nomen.
- Austere**, astringent.
- Australian blackwood**, *Acacia melanoxylon* R. Br.; **chestnut**, *Castanospermum australe* A. Cunn.; **-currant**, *Leucopogon*; **-daisy**, *Vittadinia*; **-fuchsia**, *Correa*; **-heath**, *Epacris*; **-honeysuckle**, *Banksia*; **red cedar**, *Cedrela australis* F. Muell.
- Australina** Gaudich. Urticaceae (5). 5 Austr., N.Z., S. Afr.
- Australis** (Lat.), southern.
- Autochthonous**, native.
- Autogamy**, self-pollination, *Capsella*, *Senecio*, &c.
- Autrandra** Pierre ex Prain (*Erythrocoeca* p.p.). Euph. (A. II. 2). 1 trop. Afr.
- Autrania** C. Winckler et Barbey (*Centaurea* p.p. *EP.*). Comp. (II). 1 Syria.

Autumn crocus, *Colchicum*.

Autunesia O. Hoffm. Compositae (1). 1 Angola.

Auxemma Miers. Boraginaceae (1). 2 Brazil. Useful firewood.

Auxopus Schlechter. Orchidaceae (II. 2). 1 Cameroons.

Avellanita Phil. Euphorbiaceae (A. II. 3). 1 Chili.

Avellinia Parl. Gramineae (10). 2 Medit.

Avena L. Gramineae (9). 70 temp. and Mts. of trop.; 2 Brit. (oat-grass). *A. sativa* L., the cult. oat, is perhaps derived from *A. fatua* L. It is cult. in Eur. to $69\frac{1}{2}^{\circ}$ N. and forms the staple of the food of a large population. It occurs in two chief forms, the common oat with open spreading panicles, and the Tartarian oat with contracted one-sided panicles. [See De Candolle's *Orig. of Cult. Plts.* p. 373.] The 2-6-flowered spikelets form a loose panicle. The paleae are awned, the awn of the inf. palea being usually twisted and hygroscopic. In *A. sterilis* L. the awns cross, and when wetted try to uncurl and thus press on one another till a sort of explosion occurs jerking away the fruits.

Avenastrum Jessm. (*Avena* L. p.p.). Gramineae (9). 10 S. Afr.

Avens, *Geum*.

Averrhoa L. Oxalidaceae. 4 trop. As. (?; long cult.; origin uncertain).

A. Bilimbi L. (blimbing) and *A. Carambola* L. (carambola) cult. for fr., which is borne on the older stems (cauliflory).

Averrhoidium Baill. Sapindaceae (11). 2 Brazil, Paraguay.

Averse, turned back.

Avicennia L. Verbenaceae (7). 3 trop., a constituent of the mangrove veg. (*q.v.*). The seeds germinate in the fr., and they have aerial r. projecting out of the mud like *Sonneratia*.

Avocado, *Persea gratissima* Gaertn. f.

Awl-wort, *Subularia aquatica* L.

Awn, a thread-like organ on a fr., *Anthoxanthum*, *Erodium*, *Geraniaceae*, *Gramineae*.

Axanthos Blume = *Urophyllum* Wall. (Rubiaceae).

Axia Lour. (*Boerhaavia* L. p.p. *EP.*). Nyctaginaceae (Valerianaceae? *BH.*). 1 Cochinchina.

Axial, axile, belonging to the axis; **-placentation**, on the axis, *cf.* diagram of *Guttiferae*, *Liliaceae*.

Axil, the upper angle between a l. and the stem on which it is borne; **-lary**, in the axil. *Cf.* Buds, Concrecence, &c.

Axinaea Ruiz et Pav. Melastomaceae (1). 25 trop. Am.

Axinandra Thw. (*BH.* incl. *Naxiandra* Krasser). Melastomaceae (III). (*Lythraceae BH.*) 1 Ceylon.

Axiniphyllum Benth. Compositae (5). 2 Mex.

Axis, the stem.

Axonopus Beauv. = *Paspalum* L. (Gramin.).

Axyris L. Chenopodiaceae (A). 6 Mid. and N. As.

Ayapana, *Eupatorium Ayapana* Vent.

Aydendron Nees. Lauraceae (11). 45 trop. Am.

Ayenia Loefl. (*Aniba* Aubl.). Sterculiaceae. 25 trop. and subtrop. Am.

Azadirachta A. Juss. (*Melia* L. *BH.*) 1 Indo-mal. *A. indica* A. Juss. (nim) has astringent medicinal bark, and yields good timber.

Azalea Gaertn. = *Loiseleuria* Desv.; **Azalea** L. = *Rhododendron* L.

- Azaleastrum** Rydb. (*Rhododendron* p.p.). Ericaceae (I. 2). 1 N. Am.
- Azara** Ruiz et Pav. Flacourtiaceae. 20 Mex., S. Am. Shrubs with alt. l.; one stip. is frequently almost as large as the l. to which it belongs, giving the appearance of a pair of l., not opp. Fl. apetalous; outer sta. often without anthers.
- Azedarach** Tourn. ex L. = *Melia* L. (Meliac.).
- Azeredia** Arruda (*Cochlospermum* p.p. EP.). Cochlosperm. 1 Brazil.
- Azima** Lam. Salvadoraceae. 3 S. Afr. to Phil. Is. In the axils are thorns (the l. of an undeveloped shoot, cf. Cactaceae). Polypet.
- Azolla** Lam. Salviniaceae. 4 trop. and sub trop. General structure like *Salvinia*. Two l. are formed at each node, from the dorsal half of a segment of the apical cell; from the ventral half are formed roots and branches, but not at every node. The l. are all alike; each is bilobed and has a small cavity near the base, opening by a small pore, and inhabited by the Alga *Anabaena*. The r. hang freely down in the water; usually the root cap is thrown off after a time and the r. comes almost exactly to resemble the submerged l. of *Salvinia*. The sporocarps are formed in pairs (4 in *A. nilotica*) on the ventral lobes of the first l. of the branches. Each contains one sorus. The microspores are joined together into several masses in each sporangium by the hardened frothy mucilage (epispore, cf. *Salvinia*). Each of these *massulae* has its outer surface provided with curious barbed hairs (*glochidia*), and escapes on its own account. The megasporangium contains one spore. It sinks to the bottom; decay of the indusium frees the spore and it germinates, giving rise to a ♀ prothallus which floats about on the water and may be anchored to a floating massula by the barbs.
- Azorella** Lam. Umbelliferae (I. 2). 70 Andes to N.Z. Densely tufted xero. *A. caespitosa* Vahl. (balsam-bog, Falklands) forms tufts like *Raoulia*.
- Azureus** (Lat.), sky-blue.
- B** (fl.-class), fls. with fully concealed honey, *Calluna*, many *Caryophyllaceae*, *Geranium*, *Gypsophila*, *Polemonium*, *Rubus*, *Thymus*.
- B'** (fl.-class), like B, but aggregated into dense heads, *Armeria*, *Compositae*, *Dipsaceae*, *Scabiosa*.
- Babbagia** F. Muell. (*Osteocarpum* EP.). Chenopodiaceae. 4 Austr.
- Babiana** Ker-Gawl. Iridaceae (III). 40 S. and trop. Afr., Socotra.
- Babingtonia** Lindl. = *Baeckea* L. p.p. (Myrt.).
- Babul**, *Acacia arabica* Willd.
- Bacca** (Lat.), a berry; **-cate**, with berry; **-iform**, berry-like.
- Baccaurea** Lour. Euphorbiaceae (A. I. I). 60 trop. Afr., As., Polynesia.
- Baccaureopsis** Pax. Euphorbiaceae (A. I. I). 1 trop. Afr.
- Baccharis** L. Compositae (3). 380 Am., esp. campos. Many are leafless xero. with winged or cylindrical green stems (*Bot. Jb.* 27, 446).
- Bachelor's button**, double fld. *Centaurea*, *Lychnis*, *Ranunculus*, &c.; also *Jasione*, &c.; **do.** (W.I.), *Gomphrena*.
- Bachmannia** Pax. Capparidaceae (II). 2 Pondoland.
- Bacillar**, rod-shaped.
- Backhousia** Hook. et Harv. Myrtaceae (II. I). 5 E. Austr. *B. citriodora* F. Muell. gives an essential oil almost entirely citral.

- Baconia** DC. = *Pavetta* L. (Rubi.).
- Bacopa** Aubl. (*Herpestis* Gaertn. f.). Scroph. (II. 6). 50 warm.
- Bacterial colonies**, *Pavetta*.
- Bacteroids**, *Leguminosae*.
- Bactris** Jacq. Palmae (IV. 2). 100 trop. Am., W.I. Fls. in groups of 3, one ♀ between two ♂. *B. minor* Jacq. (pupunha or peach palm, Brazil), ed. fr.
- Bacularia** F. Muell (*Linospadix* p.p. *EP.*). Palm. (IV. 1). 5 Austr., Malaya.
- Badiera** DC. (*Polygala* p.p. *EP.*). Polygalaceae. 10 trop. Am., W.I.
- Badinjan** (W.I.), *Solanum Melongena* L.
- Badius** (Lat.), chestnut brown.
- Badula** Juss. (*Ardisia* Sw. p.p. *BH.*). Myrsin. (II). 5 E. Afr. Is.
- Badusa** A. Gray. Rubiaceae (I. 5). 1 Fiji, Society Is.
- Baeckia** L. Myrtaceae (II. 1). 60 Austr. to China.
- Bael**, *Aegle Marmelos* Correa.
- Baeobotrys** Forst. = *Maesa* Forsk. (Myrsin.).
- Baeometra** Salisb. Liliaceae (I). 1 S. Afr.
- Baeria** Fisch. et Mey. Compositae (6). 20 Calif.
- Bagassa** Aubl. Moraceae (1). 3 Guiana, N. Brazil.
- Bagnisia** Becc. Burmanniaceae. 3 Malay Arch., N.Z. (?).
- Bahamas hemp**, *Agave rigida* Mill. var.; -grass, *Cynodon Dactylon*.
- Bahia** Lag. Compositae (6). 15 N. Am.
- Bahia piassaba**, *Attalea funifera* Mart.
- Baikiea** Benth. Leguminosae (II. 3). 6 trop. Afr.
- Baileya** Harv. et A. Gray. Compositae (6). 3 Utah-Mexico.
- Baillonacanthus** O. Ktze. = *Solenoruellia* Baill. (Acanth.).
- Baillonella** Pierre (*Mimusops* L. p.p. *EP.*). Sapot. (2). 1 Gaboon.
- Baillonia** Bocquillon. Verbenaceae (1). 2 S. Am.
- Baissea** A. DC. Apocynaceae (II. 1). 12 trop. Afr., As.
- Bajri**, *Pennisetum typhoideum* Rich.
- Bakeria** Andre. Bromeliaceae (3). 1 Colombia. Cult. orn. infl.
- Bakeridesia** Hochreut. Malvaceae (2). 1 Mex.
- Bakeriella** Dubard. Sapotaceae (1). 11 Afr.
- Bakerisideroxylon** Engl. (*Sideroxylon* p.p.). Sapot. (1). 3 trop. Afr.
- Balaka** Becc. (*Ptychosperma* p.p. *EP.*). Palmae (IV. 1). 2 Fiji.
- Balangue** Gaertn. Oleaceae. 1 Madag.
- Balania** Nor. Inc. sed. Spp. o.
- Balania** Van Tiegh. (*Balanophora* p.p. *EP.*). Balan. 2 E. As.
- Balaniella** Van Tiegh. (*Balanophora* p.p.). Balan. 10 E. As.
- Balanites** Delile. Zygophyllaceae. 2 Egypt, trop. Afr., Abyss. Oil.
- Balanocarpus** Bedd. Dipterocarpaceae. 16 Indomal.
- Balanophora** Forst. Balanophoraceae. 20 Indomal. Some apogamous (cf. Filicineae, Angiospermae; Treub in *Ann. Buitenz.* xv).
- Balanophoraceae** (*EP.*; *BH.*). Dicots. (Archichl. Santalales). 15 gen., 40 sp., all but one trop. Parasites (no chlorophyll) on tree roots, to which the tuberous rhiz. is attached by suckers. From it springs the infl. (sometimes developed within the rhiz. and breaking through it), which comes above ground as a spike or head with scaly l. and small unisexual fls. ♂ usu. P 3—4 or (3—4), A 3—4 or more or less. ♀ usu. P o $\overline{G}$ (1—2, rarely 3); ovule with o or 1 integument. Nut- or drupe-

like fr. Endosperm. For details and figures see *Nat. Pfl.*, or Kerner's *Nat. Hist. of Pl.* Chief genera: *Scybalium*, *Balanophora*, *Langsdorffia*. [Placed in Achlamydosporae by *BH.*]

Balanops Baill. Balanopsidaceae. 7 New Cal.

Balanopsidaceae (*EP. Balanopseae* *BH.*). Dicots. (Archichl. Balanopsidales). An anomalous order placed in Monochlam. Unisexuales by *BH.* Trees with simple l., ♂ fl. in spikes, ♀ sol. Dioec.; ♂ with one whorl of P, ♀ with ∞ scaly bracts. G (2), each with 2 ascending ov. with 1 integument. Drupe.

Balanopsidales (Engler). The 6th order of Archichlamydeae.

Balanostreblus Kurz. Moraceae (II). 1 Burma.

Balansaephytum Drake del Castillo. Morac. (II). 1 Tonquin.

Balansochloa O. Ktze. = *Germainia* Bal. et Poitr. (Gramin.).

Balantium Kaulf. Cyatheaceae. 7 Am., Polynesia, Afr.

Balata, a guttapercha-like body; *Mimusops Balata* Crueg.; **-tree** (W.I.), *Bumelia*.

Balaustion Hook. Myrtaceae (II. 1). 1 W. Austr.

Balbisia Cav. Geraniaceae. 3 Chili, Peru.

Balboa Planch. et Triana. Guttiferae (V). 1 Colombia.

Bald-money, *Meum athamanticum* Jacq.

Balduina Nutt. (*Baldwinia*). Compositae (5). 3 S. U.S.

Baldwinia Nutt. (*Balduina*). Compositae (5). 3 S. U.S.

Balfourodendron Mello. Rutaceae (IV). 1 S. Paulo.

Baliospermum Blume. Euphorbiaceae (A. II. 6). 4 Indomal.

Balisaea Taub. Leguminosae (III. 7). 1 Brazil.

Ball moss (Am.), *Tillandsia recurvata* L.

Ballochia Balf. f. Acanthaceae (IV. B). 3 Socotra.

Ballota L. Labiatae (VI). 30 Eur., Medit., W. As. *B. nigra* L. (foetid horehound), Brit.

Balls-Headleya F. Muell. Saxifragaceae (inc. sed.). Undescribed.

Balm, *Melissa officinalis* L.; **bastard-**, *Melittis Melissophyllum* L.; of Gilead, *Commiphora opobalsamum* Engl.

Baloghia Endl. Euphorbiaceae (A. II. 5). 15 E. Indomal., New Cal.

Balsa, *Ochroma Lagopus* Sw.

Balsam, *Impatiens* spp.; fluid resins; **-apple** (W.I.), *Momordica Balsamina* L.; **-bog**, *Azorella*; **broad-leaved-** (W.I.), *Oreopanax capitatum* Decne. et Planch.; **Canada-**, *Abies balsamea* Mill.; **-fig** (W.I.), *Clusia rosea* Jacq.; **-fir**, *Abies balsamea* Mill.; **Gurjun-**, *Dipterocarpaceae*; of **Copaiba**, *Copaifera* spp.; of **Peru**, *Myroxylon Pereirae*; of **Tolu**, *M. punctatum*; **pig's-**, *Hedwigia balsamifera* Sw.; **-poplar**, *Populus balsamifera* L.; **-tree**, *Commiphora*; **yellow-** (W.I.), *Croton flavens* L.

Balsamea Gled. = *Commiphora* Jacq. (Burser.).

Balsamina Tourn. ex Scop. = *Impatiens* Linn. (Balsam.).

Balsaminaceae (*EP.*; *Geraniaceae* p.p. *BH.*). Dicots. (Archichl. Sapindales). 2 gen., 230 sp., As., Afr., Eur., N. Am. Herbs with watery translucent stems and alt. l., usu. exstip. Fl. ♂, ♀. K 5 (the 2 ant. small or aborted, the post. one spurred), petaloid; C 5 (the lat. petals united in pairs); A 5, anthers adhering to one another and forming a cap over the ovary, whose growth ultimately breaks the sta. at their bases; G (5), 5-loc., with ∞ ovules, anatr., pend. with

dorsal raphe. Explosive capsule. Seed exalb. *Chief genus*: Impatiens. *BH.* unite B. with Geraniaceae (q.v.), but the arrangement of the ovule is that of Sapindales.

Balsamita Desf. = *Chrysanthemum* L. p.p. (Compos.).

Balsamocitrus Stapf. Rutaceae (v). 1 Uganda.

Balsamodendrum Kunth = *Commiphora* Jacq. (Burser.).

Balsamorhiza Hook. Compositae (5). 10 W. N. Am.

Baltimora L. Compositae (5). 3 Am.

Bambarra groundnut, *Voandzeia subterranea* Thou.

Bamboo, a member of the 13th group of Gramineae, char. by stems that become woody below and often grow to great size. The trop. forms usu. grow in clumps, which continually expand, the new shoots appearing at the outer side; the subtrop. and temp. forms are usu. continuous in their growth. There is a big rhiz. below ground and erect perenn. woody stems above, which appear in the rains (or spring) and grow rapidly to the full height, when the scale l. fall and the leafy branches spread out. Growth is very rapid in *Dendrocalamus giganteus* Munro, reaching as much as 41 cm. a day (cf. Lock, *Ann. Perad.* II. 211). Some climb. The height is often great, reaching to 120 feet in some forms.

Some fl. annually, others at longer intervals, and some are like Agave and Corypha, flowering only once, all together, and then dying down. They fl. only when in full leaf, and as the infl. grows the l. usu. fall. The seedlings grow for several years without forming tall shoots, producing large well-stored rhiz. They then send up shoots increasing in length from year to year.

Spikelets 2- ∞ -flowered in racemes or panicles. Sta. usu. 6.

The economic uses of bamboos are very numerous, esp. in Asia. The stems are hollow, with cross partitions at the nodes, and the wood is elastic and very hard, owing to the deposition of silica in the cell walls. The stems are consequently very light and strong, and are also easily split. They are largely used in building, entire as posts, and split as roofing tiles, while the houses in Assam, Burma, and Malaya are often made of bamboo split finely, and woven into a kind of mat which is fastened upon bamboo posts. Bridges are often made of them, and they furnish water-pipes, water-vessels, gutters, floats, beehives, walking-sticks, pipes, flutes, masts, furniture, household utensils, agricultural tools, &c. The distichous bamboo shoot, with the side branches cut down to about 6 inches, is used as a ladder. Split bamboos, with the edges trimmed sharp, are used as grass cutters, and will keep lawns in good order. Finely split bamboos are made into mats, blinds, rigging, baskets, fans, hats, coarse clothing, umbrellas, ropes, brushes, &c., esp. in Japan, where fine work is done in bamboo. Paper is made from bamboos in China and elsewhere. The stout stems of the male bamboo (*Dendrocalamus strictus* Nees) are used for the handles of lances. The stems cut into lengths form very useful flower pots, largely employed in tropical gardens. The young shoots are eaten like asparagus, and the poorer natives also use the seeds as food. In the stems of *B. arundinacea* Willd. curious concretions of silica are found, known as tabashir or bamboo manna, used in the East as a medicine in many diseases.

(See Kurz, Bamboo and its uses, *Ind. Forester*, 1876, and art. in *Nat. Pfl.* by Sir D. Brandis; Lock, on growth, in *Ann. Perad.* 11. 211; Freeman-Mitford, *The Bamboo Garden.*)

Bamburanta L. Linden. Marantaceae. 1 trop. Afr.

Bambusa Schreb. Gramineae (13). 70 trop. and subtrop. As., Afr., Am. The typical genus of bamboos (*q.v.*).

Bamia (L.) R. Br. ex Wall. = *Hibiscus* Tourn. (Malv.).

Bamlera K. Schum. et Lauterb. Melastomaceae (11). 1 New Guinea.

Banalia Moq. Amarantaceae (2). 1 Indomal.

Banana, *Musa Sapientum* L.

Banara Aubl. Flacourt. (5) (Samyd. *BH.*). 24 W.I., trop. Am.

Bandakai, *Hibiscus esculentus* L.

Bandeiraea Welw. (*Griffonia EP.*). Legumin. (11. 4). 3 W. trop. Afr.

Baneberry, *Actaea spicata* L.

Bania Becc. Menispermaceae. 1 New Guinea.

Banisteria L. Malpighiaceae (1). 90 trop. S. Am. Fr. like Acer.

Banisteriopsis C. B. Robinson. Malpighiaceae. 6 C. Am.

Banjolea Bowdich. Acanthaceae (inc. sed.). 1 Madeira.

Banksia L. f. Proteaceae (11). 50 Austr. (Austr. honeysuckle). Shrubs and trees with xero. habit. Fls. in dense spikes. Hard woody follicle enclosed in woody twigs derived from bract and bracteoles. Seeds winged.

Ban rhea, *Villebrunia integrifolia* Gaudich.

Banyan, *Ficus benghalensis* L.

Baobab, *Adansonia digitata* L.

Baoulia A. Chevalier. Commelinaceae. 1 Ivory Coast.

Baphia Afzel. Leguminosae (III. 1). 12 trop. Afr., Madag. *B. nitida* Afzel, cam-wood, used for red dye; the wood when first cut is white, but turns red in the air.

Baphiastrum Harms. Leguminosae (III. 1). 1 Cameroons.

Baphiopsis Benth. Leguminosae (II. 9). 2 trop. Afr.

Baptisia Vent. Leguminosae (III. 2). 25 N. Am. In *B. perfoliata* R. Br. there are perfoliate l., really in two vertical ranks, but becoming one-ranked by twisting of internodes alt. right and left.

Baptistonia Barb. Rodr. Orchidaceae (II. 19). 1 Brazil.

Barbacenia Vand. Velloz. (Amaryll. *BH.*). 36 Brazil, Afr.

Barbadoes gooseberry, *Pereskia aculeata* Mill.; -**pride**, *Caesalpinia pulcherrima* Sw., *Adenanthera pavonina* L.

Barbarea R. Br. Cruciferae (2). 15 N. temp.; 2 Brit. (yellow rocket winter-cress).

Barbatus (Lat.), bearded.

Barberetta Harv. Haemodoraceae. 1 S. Afr.

Barberina Vell. = *Symplocos* L. p.p. (*Symploc.*).

Barberry, *Berberis*.

Barbeuia Thou. Phytolaccaceae. 1 Madag.

Barbeya Schweinf. Ulmaceae. 1 Arabia, Abyssinia.

Barbeyastrum Cogn. Melastomaceae (1). 1 Congo.

Barbiera DC. Leguminosae (III. 6). 1 trop. Am., W.I.

Barbosa Becc. Palmaceae (IV. 2). 1 E. Brazil.

Barcella Drude (*Elaeis* Jacq. p.p. *BH.*). Palmae (IV. 2). 1 Amazonas.

- Barcena** Dugès. Rhamnaceae. 1 Mex.
- Barclaya** Wall. Nymphaeaceae (III). 3 Indomal. K 5 hypog.; C up to (21), epig., tubular; A ∞ ; G (10—12) with projections forming a tube above the stigmatic disc.
- Bargemontia** Gaudich. (*Dolia* Lindl. *EP.*). Nolan. 1 Peru.
- Barilla**, *Halogeton sativus* Moq.; - (W.I.), *Batis*.
- Barjonia** Decne. Asclepiadaceae (II. 3). 8 Brazil.
- Bark**, the outer coat of a tree, applied esp. to that of *Cinchona*;
Angostura-, *Cusparia febrifuga* Humb.; **Cartagena**, crown, Jesuit's, Peruvian, brown and red Peru, yellow, &c. cf. *Cinchona*; **Canella**-, *Canella*; **Cascarilla**-, *Croton Cascarilla* Benn.; **Cassia**-, *Cinnamomum Cassia* Blume; **iron**-, *Eucalyptus*; **quercitron**, *Quercus tinctoria* Bartr.; **stringy**-, *Eucalyptus*; **West Indian**-, *Exostemma*; **Winter's**-, *Drimys Winteri* Forst.
- Barkerwebbia** Becc. Palmae (IV. 1). 1 New Guinea.
- Barkhausia** Moench = *Crepis* L. (Compos.).
- Barklya** F. Muell. Leguminosae (III. 1). 1 Queensland.
- Barlaea** Reichb. f. (*Habenaria* p.p.). Orchid. (II. 1). 1 trop. Afr.
- Barleria** L. Acanthaceae (IV. A). 180 trop. largely xero. on steppes. Bracteoles frequently repres. by thorns. The seeds have surface hairs which swell when wetted. Many cult. orn. fl.
- Barleriola** Oerst. Acanthaceae (IV. A). 2 W. Ind.
- Barley**, *Hordeum vulgare* L.; -grass, *Hordeum*.
- Barnadesia** Mutis. Compositae (12). 12 S. Am. Shrubs.
- Barnyard grass** (Am.), *Panicum Crus-galli* L.
- Baronia** Baker. Anacardiaceae (3). 1 Madag.
- Baroniella** Costantin et Galland. Asclepiadaceae (1). 1 Madag.
- Barosma** Willd. Rutaceae (1). 15 S. Afr. The l. of 3 spp., esp. *B. betulina* Bartl. et Wendl. f. (buchu l.) are offic.
- Barren** (fl.), male.
- Barreria**, L. Inc. sed. 1 S. Afr.
- Barrettia** T. R. Sim. Euphorbiaceae (inc. sed.). 1 E. trop. Afr.
- Barringtonia** Forst. Lecythidaceae. 30 palaeotrop. Char. of beach-jungle. Wood of some useful; the seeds yield oil.
- Barroetia** A. Gray. Compositae (2). 5 Mex.
- Barrotia** Gaudich. = *Pandanus* L. (Pandan.).
- Barrowia** Decne. (*Orthanthera* p.p. *EP.*). Asclep. (II. 3). 2 S. and trop. Afr.
- Barteria** Hook. f. Flacourt. (6) (Passifl. *BH.*). 5 W. Afr.
- Barthea** Hook. f. Melastomaceae (1). 3 China.
- Bartholina** R. Br. Orchidaceae (II. 1). 1 S. Afr.
- Bartlettia** A. Gray. Compositae (8). 1 Mex.
- Bartlingia** F. Muell (*Laxmannia* R. Br.). Liliac. (III). 8 Austr.
- Bartonia** Muhl. Gentianaceae (1). 5 N. Am. Saprophytes with a little chlorophyll and leaves reduced to scales.
- Bartonia** Sims. = *Mentzelia* L. (Loasac.).
- Bartramia** L. = *Triumfetta* L.
- Bartsia** L. Scrophulariaceae (III. 3). 6 N. temp., trop. Mts.; 2 Brit. Mostly herbs, semi-parasitic on grass-roots (see fam.). Fl. with loose-pollen mech. (see fam.).
- Barus camphor**, *Dryobalanops aromatica* Gaertn.

Barwood, *Baphia nitida* Afzel.

Baryxylum Lour. (*Peltophorum* Walp. *EP.*). Legum. (II. 7). 1 China.

Basal (plac.), at base of ovary.

Basanacantha Hook. f. Rubiaceae (I. 8). 15 trop. Am.

Basananthe Peyr. (*Tryphostemma* *EP.*). Passifl. 3 trop. Afr.

Basella (Rheede) L. Basellaceae. 1 trop. As., a climbing herb whose fls. remain closed. Fr. enclosed in the P. Cult. as spinach.

Basellaceae (*EP.*; *Chenopodiaceae* p.p. *BH.*). Dicots. (Archichl. Centrospermae). 4 gen. 15 sp. Am., As., Afr. Rhiz. or tuber, giving annually a climbing shoot, often with fleshy l., and racemes or panicles of fls., stalked and often conspic. coloured, each with 2 bracteoles. K 2, C 5, A 5 opp. pets.; $\underline{G}$ (3) with terminal style and 3 stigmas, 1-loc.; ovule 1, basal, campylotropous. Usu. berry. *Chief genera*: Basella, Ullucus, Boussingaultia.

Baseonema Schlechter et Rendle. Asclep. (I). 4 trop. Afr., Madag.

Basi- (Lat. pref.), basal; **-fixed** (anther), joined to filament at base; **-fugal**, from base upwards; **-lar**, basal; **-petal**, towards base downwards; **-scopic**, facing the base; **-tonic**, *Orchidaceae*.

Basil, *Calamintha*, *Ocimum Basilicum* L.

Basiloxylon K. Schum. Sterculiaceae. 1 Brazil. Good timber.

Basistelma Bartlett. Asclepiad. (II. 1). 2 Mex., C. Am.

Basistemon Turcz. Scrophulariaceae (II. 4). 2 Colombia, Peru.

Baskervilla Lindl. Orchidaceae (II. 2). 1 Peru.

Basket-hoop (W.I.), *Croton lucidus* L.; **-withe** (W.I.), *Tournefortia*.

Baskets, cf. *Andropogon*, *Bamboos*, *Borassus*, *Cocos*, *Juncus*, &c.

Bass, inner fibrous bark, esp. of *Tilia*; **-wood**, *Tilia americana* L.

Bassellinia Vieill. Palmaceae (inc. sed.). 5 New Cal.

Bassia All. (*Anisacantha* R. Br. *BH.*) *Chenopodiaceae* (A). 30 N. palaeotemp., Austr.

Bassia Koenig ex L. (*Illipe* F. Muell. *EP.*). Sapotaceae (I). 50 Indomal., Austr. *B. pallida* Burck yields a gutta-percha. The seeds of *B. butyracea* Roxb. (Indian butter tree) yield a butter-like substance, used for soap-making, &c. The fls. of *B. latifolia* Roxb. (mahua, mahwa, or mowa) are ed., and the wood useful.

Bassora gum, a mixture of Indian bassorin gums.

Bassorin, cf. Gums.

Bassovia Aubl. Solanaceae (2). 15 Cent. and S. Am.

Bast, the outer part of a vascular bundle; also piassaba fibre, &c.

Bastard-balm, *Melittis Melissophyllum* L.; **-cedar**, *Chickrassia tabularis* A. Juss.; **-teak**, *Butea frondosa* Roxb.; **-toadflax**, *Thesium humifusum* DC.

Bastardia H. B. et K. Malvaceae (2). 5 W. Ind. and S. Am.

Bastardiopsis Hassler. Malvaceae (2). 1 S. Am.

Bat pollination, *Freycinetia*.

Batanthes Raf. (*Gilia* Ruiz et Pav. p.p. *BH.*). Polemon. 10 N. Am.

Bataprine Nieuwland (*Galium* L. p.p.). Rubiac. (II. 11). 2 N. Am.

Batatas Choisy = *Ipomoea* L. p.p. (*B. edulis* Choisy = *I. Batatas*).

Batemannia Lindl. Orchidaceae (II. 12). 1 Brit. Guiana.

Batesanthus N. E. Br. Asclepiadaceae (I). 1 Cameroons.

Batesia Spruce. Leguminosae (II. 8). 1 Amazon valley.

Bathieaea Drake del Castillo. Leguminosae (II. 2). 1 Madag.

Bath-sponge, *Luffa cylindrica* M. Roem.

Bathphytium (Cl.), a lowland plant formation.

Bathysa C. Presl. Rubiaceae (I. 3). 7 Brazil, Peru.

Bathysograya O. Ktze. (*Badusa* A. Gray). Rubiaceae (I. 5). 1 Fiji, Soc.

Batidaceae (EP.; *Batideae*, BH.). Dicots. (Archichl. Centrospermae).

Only genus *Batis* (q.v.). Placed in *Curvembryae* by BH.

Batidaea Greene. Rosaceae (III. 2). 16 N. Am.

Batidales. The 9th cohort of Dicots. Archichl.

Batis L. Batidaceae. 1 N. Am., Sandw. Is. Coast shrub with opp. fleshy linear l. and spikes of dioec. fl. ♂ in axils of 4-ranked br., with cup-like P, A 4. ♀ naked, G (2), with 2 anatr. ov. in each. No endosp.

Batocarpus Karst. Moraceae (II). 1 Colombia.

Batodendron Nutt. (*Vaccinium* L. p.p.). Eric. (III. 1). 3 N. Am.

Batrachium S. F. Gray = *Ranunculus* Tourn. (the aquatic sp.).

Batratherum Nees = *Arthraxon* Beauv. (Gramin.).

Batschia Vahl. (*Humboldtia* Vahl. BH.). Legum. (II. 3). 4 Ceyl., S. Ind.

Bauchea Fourn. (*Epicampes* J. Presl EP.). Gramineae (8). 1 Mex.

Baucis Phil. Compositae (12). 1 Chili.

Baudouinia Baill. Leguminosae (II. 5). 2 Madag.

Bauera Banks. Saxifragaceae (VII). 4 temp. E. Austr. Shrubs. Fls. solitary, axillary, 4—10-merous. Sta. = pet. or ∞.

Bauerella Borzi. Rutaceae (V). 1 Austr.

Bauhinia L. Leguminosae (II. 4). 220 trop. Many lianes with stems curiously shaped, flattened or corrugated and twisted owing to a peculiar mode of growth in thickness (cf. other lianes). Some sp. have tendrils (branches). In some the young l. droop. In the axils of the stips. are usu. found small linear trichome structures; in some they form stout interstipular thorns. Great variety in floral structure, &c. (see *Nat. Pfl.* III. 3, p. 151).

Baukea Vatke. Leguminosae (III. 10). 1 Madag.

Baumannia K. Schum. Rubiaceae (II. 1). 1 trop. E. Afr.

Baumea Gaudich. = *Cladium* P. Br. p.p. (Cyper.).

Baumia Engl. et Gilg. Scrophulariaceae (III. 2). 1 trop. Afr.

Bawchan seed, *Psoralea corylifolia* L.

Baxteria R. Br. Liliaceae (III) (Junc. BH.). 1 W. Austr.

Bay, *Laurus nobilis* L.; **-bean** (Bermuda), *Canavalia obtusifolia* DC.; **-berry** *Myrica cerifera* L.; **loblolly-**, *Gordonia lasianthus* L.; **-rum**, *Pimenta officinalis* Lindl.; **sweet-**, *Magnolia*, *Laurus*.

Bdallophyton Eichl. (*Cytinus* L. BH.). Rafflesiaceae. 2 Mex.

Bdellium, *Commiphora*.

Beach-grass (Am.), *Ammophila*; **-jungle**, a palaeotrop. shore formation, char. by *Barringtonia* and other woody pl., e.g. *Pandanus*, *Pemphis*, *Premna*, *Scaevola*, *Sophora*, *Thespesia*, &c.; **-pea** (Am.), *Lathyrus maritimus* Bigelow.

Beadlea Small (*Spiranthes* Rich. p.p.). Orchid. (II. 2). 1 N. Am.

Bead-tree, *Melia azedarach* L.; **do.** (W.I.), *Ormosia dasycarpa* Jacks.; **-vine** (W.I.), *Rhynchosia*.

Beads, *Abrus*, *Adenanthera*, *Coix*, &c.

Beak, a pointed outgrowth; -**rush**, *Rhynchospora*.

Beam tree, *Pyrus Aria* Ehrh.

Bean, *Vicia Faba* L.; **asparagus-** (W.I.), *Dolichos sesquipedalis* L.; **bog-**, *Menyanthes trifoliata* L.; **Bengal-**, *Mucuna (Stizolobium) sp.*; **broad-**, *Vicia Faba* L.; **black-**, *Castanospermum australe* A. Cunn.; **Calabar-**, *Physostigma venenosum* Balf.; **cherry-**, *Vigna sinensis* Endl.; **cluster-**, *Cyamopsis psoraloides* DC.; **duffin-**, *Phaseolus lunatus* L.; **French** or **haricot-**, *P. vulgaris* L.; **Hibbert-** (W.I.), *P. lunatus* L.; **Florida velvet-**, *Mucuna pruriens* DC. var.; **horse-** (W.I.), *Canavalia ensiformis* DC.; **horse-eye-** (W.I.), *Mucuna urens* Medic.; **kidney-**, *Phaseolus vulgaris* L.; **Lima-**, *P. lunatus* L.; **nickar-**, *Caesalpinia bonducella* Fleming, *Entada scandens* Benth.; **ordeal-**, *Physostigma venenosum* Balf.; **red-** (W.I.), *Vigna Catjang* Walp.; **sabre-**, *Canavalia*; **sacred-**, *Nelumbium speciosum* Willd.; **seaside-** (W.I.), *Canavalia obtusifolia* DC., *Vigna glabra* Savi; **soja** or **soy-**, *Glycine Soja* Sieb. et Zucc.; **sugar-** (W.I.), *Phaseolus lunatus* L.; **St Ignatius'-**, *Strychnos Ignatii* Berg.; **sword-** (W.I.), *Canavalia ensiformis* DC.; **Tonka** or **Tonquin-**, *Dipteryx odorata* Willd.; **-tree**, *Castanospermum australe* A. Cunn.; **do.** (W.I.), *Erythrina*; **white-**, *Lima-*; **yam-**, *Pachyrhizus tuberosus* Spr., *Dolichos Lablab* L.; **year-** (W.I.), *Phaseolus vulgaris* L.

Bearberry, *Arctostaphylos*, (Am.) *Rhamnus Purshiana* DC.; **-grass** (Am.), *Yucca*; **-s foot**, *Helleborus foetidus* L.

Beard grass, *Polypogon*.

Beatsonia Roxb. (*Frankenia* L. p.p. *BH.*). Franken. 1 St Helena.

Beaucarnea Lem. (*Nolina* Michx.). Liliaceae (VI). 15 N. Am.

Beaufortia R. Br. Myrtac. (II. 1). 15 W. Austr. Some cult. orn. fl.

Beaumontia Wall. Apocynaceae (II. 1). 5 Indomal.

Beauprea Brongn. et Gris. Proteaceae (I). 7 New Cal.

Beauvisagea Pierre = *Lucuma* (*BH.*) = *Sideroxylon* (Dill.) L.

Beaver poison (Am.), *Cicuta maculata* L.

Bebbia Greene. Compositae (5). 3 S.W. U.S.

Beccarianthus Cogn. Melastomaceae (II). 1 Borneo.

Beccariodendron Warb. (*Mitrephora* *EP.*). Anonac. (2). 1 Oceania.

Becium Lindl. = *Ocimum* Tourn. (Labiata.).

Beckera Fresen. Gramineae (4). 3 Abyss.

Beckeria Ridl. Rubiaceae (I. 7). 1 Malaya.

Beckmannia Host. Gramineae (II). 1 N. temp.

Beckwithia Jepson (*Ranunculus* p.p.). Ranunc. (3). 1 Calif.

Becquerelia Brongn. Cyperaceae (II). 3 trop. S. Am.

Beda nut, *Terminalia belerica* Roxb.

Beddomea Hook. f. (*Aglaia* p.p. *EP.*). Meliaceae (III). 2 India.

Bedfordia DC. Compositae (8). 2 temp. Austr., Tasm.

Bed-straw, *Galium*.

Bee-flowers, fl. esp. of class H, chiefly visited by bees; *Antirrhinum*, *Aquilegia*, *Boraginaceae*, *Borago*, *Calluna*, *Campanulaceae*, *Cobaea*, *Compositae*, *Digitalis*, *Gentiana*, *Labiatae*, *Lamium*, *Lavandula*, *Leguminosae*, *Lotus*, *Lychnis*, *Monarda*, *Onagraceae*, *Pedicularis*, *Phacelia*, *Pyrus*, *Rhododendron*, *Symphytum*, *Tilia*, *Trifolium*, *Vaccinium*.

- Beech**, *Fagus sylvatica* L.; **-fern**, *Dryopteris Phegopteris* L.; **-mast**, the capsules of fr.; **seaside-** (W.I.), *Exostemma*.
- Beef-apple** (W.I.), *Sapota*; **-wood**, *Stenocarpus*, *Casuarina*, &c.
- Beesha** Kunth = *Melocanna* Trin. (Gramin.); **do.** Munro = *Ochlandra*.
- Beetroot**, *Beta vulgaris* L.; **sugar-**, a var.
- Befaria** Mutis (*Bejaria*). Ericaceae (I. 1). 20 trop. and subtrop. Am. *B. racemosa* Vent. and others (Andes rose) form a consp. feature in the veg., taking the place of Rhododendrons.
- Begonia** (Tourn.) L. Begoniaceae. 600 trop. and subtrop., esp. Am. Many cult. for handsome fls. and foliage. Most are perenn. herbs with thick rhiz. or tubers. Several climb by aid of roots like ivy. L. rad. or alt., in two ranks, with large stips. One side of the l. is larger than the other, whence the name 'elephant's ear,' by which they are sometimes known. The surface of the l. is easily wetted, and drip-tips are frequent (cf. *Ficus*). In the axils groups of little tubers are frequently found; these are not axillary branches, but are borne upon the true axillary branch, which does not lengthen. They also repr. easily by adv. buds which readily form on pieces of l. cut off and placed on the soil under suitable conditions of moisture &c. (the common mode used in horticulture). A callus forms over the wound, and in it there develops a meristem which gives rise to one or more buds.
- Infl. axillary, dich. with a bostryx tendency. The first axes usually end in ♂, the last and sometimes the last but one in ♀, fls. In the ♂, P 2, valvate, or 4, decussate, corolline; A ∞, free or not, the connective often elongated and the anthers variously shaped. In the ♀, P 2—5; $\bar{G}$ usu. (2—3), with 2—3 loc., and axile plac. often projecting far into them; ovules ∞, anat.; styles ± free. Ovary usu. winged; the wings persistent upon the capsular fr. No endosperm.
- Begoniaceae**. Dicotyledons (Archichl. Parietales). 4 gen. with the characters of *Begonia* (*q.v.*). Placed in Passiflorales by BH.
- Begoniella** Oliv. Begoniaceae. 3 Colombia.
- Behaimia** Griseb. Leguminosae (III. 8). 1 Cuba.
- Behen-oil**, *Moringa pterygosperma* Gaertn.
- Behnia** Didrichsen. Liliaceae (x). 1 S. Afr.
- Behria** Greene. Liliaceae (IV). 1 S. Calif.
- Behuria** Cham. Melastomaceae (I). 7 S. Brazil.
- Beilschmiedia** Nees. Lauraceae (II). 40 trop., and Austr., N.Z.
- Bejaria** Zea (*Befaria* Mutis, *q.v.*). Ericac. (I. 1). 15 warm Am.
- Belairia** A. Rich. Leguminosae (III. 1). 2 Cuba.
- Belamcanda** Adans. Iridaceae (II). 1 E. As. Cult. orn. fl.
- Belangera** Cambess. Cunoniaceae. 10 S. Brazil, Paraguay.
- Belencita** Karst. Capparidaceae (II). 1 Colombia.
- Belladonna**, *Atropa Belladonna* L.
- Belladonna** Sweet = *Amaryllis* L. (*Amaryll.*).
- Bell apple** (W.I.), *Passiflora laurifolia* L.; **-flower**, *Campanula*, *Wahlenbergia*.
- Bellardia** All. (*Bartsia* L. p.p. BH.). Scroph. (III. 3). 2 Medit.
- Bellendena** R. Br. Proteaceae (I). 1 Tasmania.
- Bellevallia** Lapeyr. = *Hyacinthus* Tourn. p.p. (Liliac.).
- Bellida** Ewart. Compositae (3). 1 Austr.

- Bellis** (Tourn.) L. Compositae (3). 15 Eur., Medit. *B. perennis* L. (daisy) Brit. Multiplies and also hibernates by short rhiz. Ray florets ♀. The head closes at night and in wet weather. Cult. orn. fl.
- Bellium** L. Compositae (3). 6 Medit.
- Bellonia** (Plum.) L. Gesneriaceae (II). 2 W.I.
- Bellucia** Neck. Melastomaceae (I). 15 trop. Am. Fr. ed.
- Belly-ache bush** (W.I.), *Jatropha gossypifolia* L.
- Belmontia** E. Mey. Gentianaceae (I). 20 S. and trop. Afr., Madag.
- Beloanthera** Hassk. Inc. sed. 1 Java.
- Belonanthus** Graebn. Valerianaceae. 2 Peru, Bolivia.
- Belonophora** Hook. f. Rubiaceae (II. I). 1 W. Afr.
- Beloperone** Nees. Acanth. (IV B). 45 warm Am., many cult. orn. fl.
- Belotia** A. Rich. Tiliaceae. 1 Cuba, Mex.
- Bembicia** Oliv. Flacourt. (7) (Samyd. *BH.*). 1 Madag.
- Bembicina** O. Ktze. = *Bembicia* Oliv. (Flacourt.).
- Bembix** Lour. Malpighiaceae (inc. sed.). 1 Cochinchina.
- Bencomia** Webb. et Berth. Rosaceae (III. 5). 2 Canaries, Madeira.
- Benevidesia** Saldanha et Cogn. Melastomaceae (I). 1 S. Brazil.
- Bengal beans**, *Stizolobium* (*Mucuna*) sp.; **-kino**, *Butea frondosa* Roxb.
- Beni seed** (W. Afr.), *Polygala butyracea* Heckel.
- Benincasa** Savi. Cucurbitaceae (III). 2 trop. As. The fr. of *B. cerifera* Savi. is eaten in curries. It has a thick coating of wax.
- Benjamin, gum-**, *Styrax Benzoin* Dryand.; **-bush** (Am.), *Lindera Benzoin* Meissn.
- Bennettia** Miq. Flacourtiaceae (4). 2 S. As.; **do.** R. Br. = Galearia.
- Ben nut, -oil**, *Moringa pterygosperma* Gaertn.
- Bent-grass**, *Agrostis*, *Apera*; **silky-**, *Cynosurus*.
- Benthamantha** Alef. = *Cracca* Benth. (Legum.).
- Benthamia** Lindl. (1830) = *Amsinckia* Lehm.; (1833) = *Cornus* Tourn.
- Benthamiella** Spegazz. Solanaceae (inc. sed.). 10 Patagonia.
- Bentia** Rolfe. Acanthaceae (IV. B). 1 S. Arabia.
- Bentinckia** Berry. Palmae (IV. I). 2 India.
- Benzoin** Hayne = *Styrax* L. **do.** Nees = *Lindera* Thunb.
- Benzoin, gum**, *Styrax Benzoin* Dryand.
- Benzonia** Schum. Rubiaceae (inc. sed.). 1 W. Afr.
- Berardia** Brongn. = *Nebelia* Neck. (*BH.*) = *Diberara* Baill. (*EP.*).
- Berardia** Vill. Compositae (12). 1 Alps.
- Berberidaceae** (*EP.*; *BH.* incl. *Lardizabalaceae*). Dicotyledons (Archichl. Ranales). 11 gen., 135 sp., N. temp. (*Berberis* in trop. Mts. and S. Am.). Perennial herbs or shrubs, in the former case usu. with sympodial rhiz. Fls. in racemes, ♀, reg.; typical formula $P\ 3+3+3+3$, $A\ 3+3$, $G\ 1$; fl. sometimes 2-merous. Of the 4 outer whorls, the two outer are P proper, the two inner 'honey-leaves' usu. with nectaries at the base (see Ranunculaceae). The former are often termed the K, the latter the C. Anthers introrse, but in most cases open by two valves (*cf.* Lauraceae) at the back; the valve with the pollen on it moves upwards and turns round so that the pollen faces towards the centre of the fl. Cpl. always 1, with one or many ovules, in the former case usu. basal, in the latter ventral. Berry, or a dry fruit opening in various ways. Embryo straight in rich endo-

sperm. *Chief genera*: Podophyllum, Epimedium, Leontice, Berberis. [Placed in Ranales by BH.; their **chars.** include unisexual fl., extrorse anthers.]

Berberideae (BH.) includes preceding and Lardizabalaceae.

Berberidopsis Hook. f. Flacourt. (1). (Berber., Lardizabal. auct.)
1 Chili.

Berberis (Tourn.) L. Berberidaceae. 160 sp. S. Am. *B. vulgaris* L. (barberry) Brit. Shrubs. Two sections. In § 1, *Mahonia* (Nutt.), the l. are pinnate; many cult. shrubs. In § 2, *Euberberis*, the l. are simple, but usu. show a joint where the blade meets the petiole, seeming to indicate a derivation from a cpd. l. There are also 'short' and 'long' shoots (*cf.* Coniferae) in this §, to which *B. vulgaris* belongs. The latter have their l. met. into spines (usu. tripartite); transitions may often be seen. The former stand in the axils of the spines and bear green l. and racemes of fls. (afterwards sometimes elongating to 'long' shoots). The pollination mechanism is interesting. The upper surface of the base of each sta. is sensitive to contact, and when it is touched by an insect in search of honey (secreted by the nectaries upon the bases of the inner P l.) the sta. springs violently upwards, covering the side of the visitor's head with pollen, which it may place on the stigma in the next flr. visited. The fr. is sometimes made into preserves.

An interesting point about the common barberry is its connection with the disease known as *black rust*, which occurs on wheat and other Gramineae. The fungus (*Puccinia graminis* or *Aecidium berberidis*) passes through two alt. stages in its life history, one on the grass, the other on the barberry, so that if there are no barberry plants in a district, it is to a large extent, though by no means absolutely, insured against black rust.

Barberry, *Berberis*.

Berchemia Neck. Rhamnaceae. 15 palaeotrop., Atl. N. Am.

Bere, *Hordeum vulgare* L.

Berendtia A. Gray. Scrophulariaceae (11. 4). 4 Mex., C. Am.

Berendtiella Wettst. et Harms = *Berendtia* A. Gray.

Berenice Tul. Saxifragaceae (v). 1 Bourbon.

Bergamot, *Mentha citrata* Ehrh. = *aquatica* L.; -orange, *Citrus Aurantium* L., var. *Bergamia* Wight et Arn.

Bergenia Moench (*Saxifraga* p.p. BH.). Saxifr. (1). 10 E. As.

Bergera Koen. ex L. = *Murraya* L. (Rutac.).

Bergerocactus Britton et Rose (*Cereus* p.p.). Cact. (III). 1 Calif.

Bergeronia M. Micheli. Leguminosae (III. 8). 1 Paraguay.

Berghesia Nees. Rubiaceae (inc. sed.). 1 Mex.

Bergia L. Elatinaceae. 25 trop. and temp.

Berginia Harv. Acanthaceae (IV. B). 1 Calif.

Bergsmia Blume (*Ryparosa* Blume). Flacourt. (3) (Bix. BH.).
8 S.E. As.

Beringeria Neck. = *Ballota* L. p.p. (Labiata.).

Berinia Brignol. = *Crepis* Vaill. p.p. (Compos.).

Berkheya Ehrh. Compositae (6). 80 Afr.

Berkheyopsis O. Hoffm. Compositae (10). 5 S. and trop. Afr.

Berlandiera DC. Compositae (5). 5 sp. S. and E. U.S.

- Berlinia** Soland. Leguminosae (II. 3). 18 trop. Afr.
- Bermuda arrowroot**, cf. A.; -grass, *Cynodon Dactylon* Pers.
- Bermudiana** (Tourn.) L. = *Sisyrinchium* L. p.p. (Crucif.).
- Bernardia** Houst. ex P. Br. Euphorb. (A. II. 2). 24 warm Am., W.I.
- Bernardinia** Planch. Connaraceae. 2 S. Brazil.
- Berneuxia** Decne. Diapensiaceae. 1 E. Tibet.
- Bernieria** Baill. Lauraceae (II). 1 Madag.
- Bernoullia** Oliv. Bombacaceae (2) (Stercul. BH.). 1 C. Am.
- Berria** Roxb. (*Berrya*). Tiliaceae. 2 Indomal., Polynesia. *B. Ammonilla* Roxb. gives a valuable timber (Trincomali wood, Ceylon, India).
- Berries**, yellow, *Rhamnus infectoria* L.
- Berroa** Beauverd (*Lucilia* p.p.). Compositae (4). 1 S. Am.
- Berry**, a fleshy fr. containing no hard part but the seeds, *Actaea*, *Berberis*, *Ribes*, *Solanum*, *Vaccinium*, *Vitis*; dehiscent in *Akebia*, *Myristica*, constricted between seeds in *Maerua*, *Unona*, &c.; **bay-**, *Myrica cerifera* L.; **bil-**, *Vaccinium Myrtillus* L.; **black-**, *Rubus*; **blae-**, = bil-; **buffalo-**, *Shepherdia argentea* Nutt.; **checker-**, *Gaultheria procumbens* L.; **cloud-**, *Rubus Chamaemorus* L.; **cow-**, *Vaccinium Vitis-Idaea* L.; **cran-**, *Vaccinium Oxycoccus* L.; **crow-**, *Empetrum nigrum* L.; **dew-**, *Rubus caesius* L.; **goose-**, *Ribes Grossularia* L.; **huckle-**, *Gaylussacia*; **partridge-**, = checker; **rasp-**, *Rubus Idaea* L.; **straw-**, *Fragaria vesca* L.; **trimble-**, *Rubus occidentalis* L.; **whortle-**, = bil-.
- Berrya** Roxb. (*Berria*, q.v.). Tiliaceae. 2 Indomal., Polynesia.
- Bersama** Fres. Melianthaceae (Sapind. BH.). 20 trop. and S. Afr.
- Bersim**, *Trifolium alexandrinum* L.
- Berteroa** DC. (*Alyssum* p.p. BH.). Cruciferae (4). 5 N. palaeotemp.
- Bertholletia** Humb. et Bonpl. Lecythidaceae. 2 trop. S. Am., W. I. Fr. a large woody capsule, containing seeds with hard woody testa and oily endosperm (Brazil nuts). The fr. is indehiscent and the seeds are procured by opening it with an axe. It is closed by a plug formed of the hardened calyx, and in germination the seedlings escape here (Watson, *Ann. Bot.* xv. 1901, p. 99).
- Bertiera** Aubl. Rubiaceae (I. 8). 25 trop. Am., Afr.
- Bertiera** Blume = *Adenosacme* Wall. (BH.). = *Mycetia* Reinw.
- Bertolonia** Raddi. Melastomaceae (I). 10 Brazil, cult. orn. Young plants form at cuts across the midrib of a l. placed on damp soil.
- Bertya** Planch. Euphorbiaceae (B. II). 12 Austr., Tasm.
- Berula** Hoffm. ex Bess. = *Sium* Tourn. p.p. (Umbell.).
- Berzelia** Brongn. Bruniaceae. 7 S. Afr.
- Beschorneria** Kunth. Amaryllidaceae (II). 10 Mex. Cult. orn. fl. and l.
- Besleria** Plum. ex L. Gesneriaceae (I). 70 warm Am., W.I.
- Bessera** Schult. f. (BH. excl. *Androstephium*). Liliac. (IV). 1 Mex., Calif.
- Besseyia** Rydb. (*Synthyris* Benth. EP.). Scroph. (III. 1). 7 N.W. Am.
- Beta** (Tourn.) Linn. Chenopodiaceae (2). 6 sp. Eur., Medit.; 1 in Brit., *B. vulgaris* L. or *B. maritima* L. the sea-beet, from which are derived the garden beetroot, the sugar-beet (var. *Rapa* Dumort.),

and the mangold-wurzel. The plant is a biennial and stores reserves in the root, the non-nitrogenous materials taking the form of sugar.

The sugar-beet is largely cult. in W. Eur. for its sugar, a formidable rival to the older industry of cane sugar. The sugar-contents of the roots have been continually improved by selection, and now frequently represent over 20% of the weight. Germany grows 1½ million tons of beet sugar annually, and other countries about another 3 millions. [Herzog, *Monographie der Zucker-rübe*, Hamburg, 1899.]

The garden beet is a favourite vegetable; the mangold is valuable for feeding cattle, &c. The l. are sometimes eaten like spinach.

Betckea DC. = *Plectritis* DC. (Valerian.).

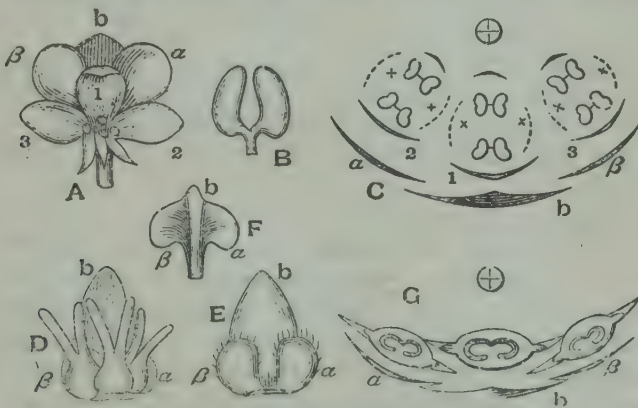
Betel-nut, *Areca Catechu* L.; **-pepper**, *Piper Betle* L.

Betonica (Tourn.) Linn. = *Stachys* Tourn. (Labi.).

Betony, *Stachys*.

Betula (Tourn.) L. Betulaceae (2). 38 N. temp., arct. *B. alba* L., the birch, is common in Brit. and reaches to the N. limit of trees, which is occupied by *B. nana* L., a creeping shrubby form, in much of the N. temp. zone. The winter buds are scaly, the scales representing stips.: the outer two or three pairs of them have no l. *Witches' brooms* are very commonly to be seen as dense tufts of twigs.

Trees with catkins of fls. The ♂ catkins are laid down in autumn as large buds at the end of the year's growth, the ♀ further back, on



B. alba. A, bract, bracteoles, and perianth, of ♂, from within, with sta. removed; B, a stamen; C, floral diagram of A; D, bract, bracteoles and fls. of ♀ from within; E, the same with fls. removed; F, the same at ripeness of seed; G, floral diagram of D. b = bract; a, β = bracteoles of fl. 1, or bracts of fls. 2, 3. After Eichler.

leafy branches. In the axil of each l. of the catkin there are 3 fls. (cf. other genera of B.). The bracts of the lateral fls. occur (a, β) but no bracteoles. In the ♂ the bracteoles a β are joined to the bract itself. Each fl. has two sta. and a perianth, often reduced from the typical 4 l. to the 2 median l., or even to the single anterior l. The sta. are divided into halves nearly to the base; the lat. ones are absent. In the ♀ the bracteoles a β are free from the bract at the time of fertilisation, but afterwards they unite with it to form the 3-lobed woody scale (F in figure) under the fruit (or rather the tissue

beneath them grows up, carrying all up together). The 2-loc. ovary gives rise to a 1-seeded nut, attached to the scale. There is no P.

Birch-wood is tough and is used for various purposes, e.g. for wooden shoes and for charcoal. The oil prepared from the bark is used in tanning Russia leather, to which it gives its peculiar fragrance. The bark of *B. papyracea* Ait. (N. Am.) is used in making canoes.

Betulaceae (EP.; *Cupuliferae* p.p. BH.). Dicots. (Archichl. Fagales). 6 gen. with 90 sp., chiefly N. temp. Shrubs or trees with alt. undivided stip. l., the membranous stips. soon falling. The seedling stems are radial in symmetry, but in the old branches the l. are often 2-ranked and face upwards.

Fls. monoecious, anemophilous, in terminal catkins; the stem is thus sympodial. In the axils of the l. of the catkins are small dichasial cymes, typically of 3 fls. (see *Betula*, &c.). The central fl. is often absent, and some of the bracteoles also. The ♂ fl. is united to the bract and may have a perianth; sta. 2—12. The ♀ may have an epig. perianth. $\bar{G}$ (2), 2-loc., each with 1 pend. ovule with one integument. Some genera are chalazogamic. Nut 1-seeded; seed exalb. After fert. the bract and bracteoles grow into a scale- or cup-like organ which may remain attached to the fruit.

Classification and genera (after Winkler):

1. *Coryleae* (♂ fl. solitary, naked, on bract): *Ostryopsis*, *Carpinus*, *Ostrya*, *Corylus*.

2. *Betuleae* (♂ fl. with perianth, in dichasia): *Betula* (sta. bifid), *Alnus* (not).

Beureria Jacq. (*Bourreria* P. Br.). Borag. (II). 30 trop. Am., W.I.

Beyeria Miq. Euphorbiaceae (B. II). 13 Austr.

Beyerlopsis Muell.-Arg. = *Beyeria* Miq. p.p. (Euphorb.).

Beyrichia Cham. et Schlecht. Scrophular. (II. 6). 3 Brazil, W.I.

Bhang, *Cannabis*.

Bhotan pine, *Pinus excelsa* Wall.

Bi-, bis- (Lat. pref.), two-; **-auriculate**, **-carpellary**, **-ceps** (Lat. heads), **-color** (Lat.), **-cuspidate**, **-dentate**, **-ennial** (lasting two years), **-farious** (two ranked), **-fid**, **-foliate**, **-geminat**, **-labiate**, **-lateral**, **-lobus** (Lat. lobed), **-locular**, **-nary** (of two members), **-nate** (of two leaflets), **-parous** (dichasial), **-partite**, **-pinnate**, **-seriate**, **-serrate**, **-spinose**, **-sulcate**, **-ternate**, &c., are intelligible enough.

Biarum Schott. Araceae (VII). 7 Medit.

Biasolettia Koch (Freyera Rchb.). Umbel. (III. 2). 6 Medit.

Bicarpellatae (Benth.-Hooker). The 3rd series of Gamopetalae.

Bicornella Lindl. Orchidaceae (II. 1). 2 Madag.

Bicornes (Warming). The 1st order of Sympetalae.

Bicuculla Borkh. = *Adlumia* Raf. (Papav.).

Bicuspidaria Rydb. (*Mentzelia* L. p.p.). Loasac. 3 Calif.

Bidaria Decne. = *Gymnema* R. Br. p.p. (Asclep.).

Bidens (Tourn.) L. Compositae (5). 120 cosmop. (Spanish needle); 2 Brit. (bur-marigold). Fr. distr. by the 2—6 barbed bristles of the pappus. *B. Beckii* Torr. (N. Am.) a heterophyllous water pl.

Bidwillia Herb. Liliaceae. Nomen.

Biebersteinia Steph. Geraniaceae. 4 E. Medit., W. As.

Bieneria Reichb. f. (*Chloraea* BH.). Orchid. (II. 2). 1 Bolivia.

- Bienertia** Bunge. Chenopodiaceae (B). 1 W. As.
Biernannia King et Pantl. Orchid. (II. 20). 2 E. Indies.
Bifaria O. Ktze. (*Panicum* L. p.p.). Gramin. (5). 3 Brazil.
Bifaria Van Tiegh. Loranthaceae (1). 50 warm |*.
Bifora Hoffm. Umbelliferae (III. 3). 4 N. subtrop.
Bifrenaria Lindl. Orchidac. (II. 12). 14 trop. S. Am. Cult.
Big, 4-rowed barley.
Big tree, *Sequoia gigantea* Lindl. et Gord., *Eucalyptus*.
Bigelovia Spreng. = *Spermacoce* L. (BH.) = *Borreria* G. F. W. Mey.
Bigelowia DC. Compositae (3). 40 N. Am. to Ecuador.
Biglandularia Karst. (*Leiphaimos* p.p. EP.). Gentian. (1). 1 Venezuela.
Bignonia (Tourn.) L. (BH. incl. *Cremastus*, *Cydistia*, *Doxantha*, *Phaedranthus*, *Pleonotoma*, *Stizophyllum*, of Miers, and *Paragonia* Bur., *Pyrostegia* Presl, making 150 spp. in all). Bignon. (1). 2 W. I. to Argentina, incl. *B. Unguis-cati* L. cult. for its masses of fl., which appear simultaneously. Tendrils grapnel-like with three claws (modified l.), thickening after clasping. Fl. protandr.
Bignoniaceae (BH. EP.). Dicots. (Sympet. Tubiflorae; Personales, BH.). 60 gen., 500 sp. trop. One genus (Catalpa) common to old and new worlds. Most in Brazil; a few temp. Trees and shrubs, most commonly lianes, with opp. usu. cpd. exstip. l. Many xero. shrubs with condensed stems, but the chief interest centres in the climbers, a very important feature in the forest veg. of S. Am. Twiners (e.g. *Tecomaria*, *Pandorea*), root-climbers (*Tecoma radicans*), and tendril climbers (most B.). In *Eccremocarpus* &c. the internodes and petioles are sensitive, but in most B. the tendrils are at the ends of the l. (in place of leaflets, as in *Vicia*). The tendrils are frequently branched; in some cases the branched tendril occupies the place of one leaflet. Three types of tendril are found—simple twiners, tendrils provided with adhesive discs (as in virginia creeper), and hooked tendrils. See *Glaziovina*, *Bignonia* &c. The climbing stems exhibit many features of anatomical interest, owing to the peculiar growth in thickness.

Infl. usu. dich. with cincinnal tendency; bracts and bracteoles present. Flr. ♀, +, hypog. K (5) : C (5), usu. bell- or funnel-shaped, descendingly imbr.; A 4, epipet., didynamous, the anther-lobes usu. one above the other, the post. std. always present; $\bar{G}$ (2) on hypog. disc, 2- (or rarely 1-) loc., with ∞ erect anatr. ov. on axile plac. Caps. septifr. or loculic. : seed usu. flattened and with large membranous wing, exalb.

Classification and chief genera (after Schumann):

- I. *Bignoniaceae* (ovary completely 2-loc., compressed || septum, or cylindrical; caps. septifr. with winged seeds; usu. tendril-late): *Glaziovina*, *Bignonia*, *Oroxylum*.
- II. *Tecomeae* (ovary 2-loc., compressed $\perp$ septum or cylindrical; caps. loculic. with winged seeds; rarely tendril-late): *Incarvillea*, *Jacaranda*, *Catalpa*, *Tecoma*, *Spathodea*.
- III. *Eccremocarpeae* (ovary 1-loc.; caps. splits from below up.; seeds winged; tendrils): *Eccremocarpus* (only gen.).
- IV. *Crescentieae* (ovary 1- or 2-loc.; fr. berry or dry indehiscent; seed not winged; usu. erect pl.): *Parmentiera*, *Crescentia*, *Phyllarthron*, *Kigelia*.

- Bihai** Adans. = *Heliconia* L. (Musac.).
Bikh poison, *Aconitum ferox* Wall.
Bikkia Reinw. Rubiaceae (I. 1). 15 E. Malay Arch., Polynesia.
Bilabium Miq. = *Didymocarpus* Wall. p.p. (Gesner.).
Bilberry, *Vaccinium Myrtillus* L.
Bilegnum Brand (*Rindera* Pall.). Boragin. (IV. 1). 1 Persia.
Bileveillea Vaniot (*Blumea* p.p. EP.). Compos. (4). 5 Nepal, China.
Bilimbi, *Averrhoa Bilimbi* L.
Bilitium Buch.-Ham. Inc. sed. 1 India.
Billardiera Sm. Pittosporaceae. 9 Austr.
Billbergia Thunb. Bromel. (4). 40 trop. Am. Epiph. Cult. orn. infl.
Billia Peyr. (*Aesculus* p.p. BH.). Hippocast. 2 trop. Am.
Billiard balls, *Phytelephas*.
Billiottia DC. (*Melanopsidium* EP.). Rubi. (I. 8). 1 Brazil.
Billottia R. Br. = *Agonis* DC. (Myrt.).
Biltia Small (*Rhododendron* p.p.). Eric. (I. 2). 1 N. Am.
Bima Nor. Inc. sed. Nomen.
Bindweed, *Convolvulus* spp.; **black-**, *Polygonum*.
Bingeria A. Chevalier (*Guarea* p.p.). Meliaceae (III). 1 Afr.
Binotia Rolfe. Orchidaceae (II. 19). 1 Brazil.
Biogenesis, life from life.
Bioletia Greene (*Trichocoronis* p.p.). Compos. (6). 1 Calif.
Biology, in narrower sense, ecology.
Biometry, statistical measurement of living beings.
Bion, an independent individual.
Biondia Schlechter. Asclepiadaceae (II. 3). 1 China.
Biophytum DC. Oxalid. 25 trop. Many have sensitive pinnate l.; the leaflets bend down when touched (*cf.* *Mimosa*). Explosive aril on the seeds (*cf.* *Oxalis*).
Biota D. Don = *Thuja* L. p.p. (Conif.).
Biotia DC. = *Aster* Tourn. p.p. (Compos.).
Biovularia Kamienski. Lentibul. 2 W. Ind., N. Brazil.
Bipinnula Comm. ex Juss. Orchidaceae (II. 2). 8 temp. S. Am.
Birch, *Betula*; (W.I.) *Bursera*.
Bird-cherry, *Prunus Padus* L.; **-pepper**, *Capsicum minimum*.
Birds as agents in pl. dispersal, *cf.* Seed-dispersal.
Bird's foot, *Ornithopus perpusillus* L.; **-trefoil**, *Lotus*; **-nest fern**, *Asplenium Nidus* L.; **-orchis**, *Neottia Nidus-avis* Rich.; **yellow** **-nest**, *Monotropa Hypopitys* Walt.
Birthwort, *Aristolochia Clematitis* L.
Bisboeckelera O. Ktze. (*Hoppia* Nees). Cyper. (II). 4 S. Am.
Bischofia Blume. Euphorb. (A. I. 1). 1 Indomal., Polyn. Bark medic.
Biscutella L. Cruciferae (2). 15 S. and mid. Eur.
Biserrula L. Leguminosae (III. 6). Medit.
Bisglaziovina Cogn. Melastomaceae (1). 1 Brazil.
Bisgoeppertia O. Ktze. (*Goeppertia* p.p.). Gent. (1). 2 Cuba.
Bishop's cap (Am.), *Mitella*; **-weed**, *Aegopodium*.
Bisluederitzia O. Ktze. (*Neoluederitzia*). Zygophyll. 1 S. Afr.
Bismarckia Hildebr. et H. Wendl. (*Medemia* Princ. Guil. de Wurt.).
 Palmae (II). 1 Madagascar.
Bisphaeria Nor. Inc. sed. Nomen.

- Bisrautanenia** O. Ktze. (*Neorautanenia*). Legum. (III. 10). 1 S. Afr.
Bissy nuts, Cola nuts, *Cola*.
Bistania Nor. Inc. sed. Nomen.
Bistella Adans. Inc. sed. Nomen.
Bistort, *Polygonum*.
Bistorta Tourn. = *Polygonum* L. p.p. (Polyg.).
Biswarea Cogn. Cucurbitaceae (3). 1 W. Himal.
Bitchwood (W.I.), *Lonchocarpus*.
Bitter ash (W.I.), *Picraena*; **cress**, *Cardamine*; **-nut**, *Carya*; **-orange**, *Citrus Aurantium* L. var. *Bigaradia*; **-root**, *Lewisia*; **-sweet**, *Solanum Dulcamara* L.; **-wood**, *Picraena*, *Picramnia*, &c.
Bitteria Börner (*Carex* p.p.). Cyperaceae (III). 5 N. temp.
Bivinia Tul. (*Calantica* p.p. EP.). Flac. (9) (Samyd. BH.). 1 Madag.
Bivolva Van Tiegh. (*Balanophora* p.p.). Balan. 5 India, China.
Bivonaea DC. Cruciferae (2). 4 W. Medit.
Bixa L. Bixaceae. 2 trop. Am. *B. Orellana* L. cult for the seed; the orange colouring matter of the outer layer of the testa (annatto, arnotto, roucou) is used in dyeing sweetmeats &c.
Bixaceae (EP.; *Bixineae* BH. incl. *Flacourtiaceae* and *Cochlospermaceae*). Dicots. (Archichl. Parietales EP. BH.). 3 gen. 6 sp. trop. Small trees or shrubs; l. alt. stip. entire. Fl. in panicles, ♀, reg. K 5, C 5, A ∞, G (2), 1-loc. with parietal plac. and ∞ anatr. ov. Style simple. Capsule splitting between plac. Seeds with red fleshy papillae. Endosp. starchy. *Chief genus* Bixa.
Bixineae (BH.). Bixaceae, in wide sense. See above.
Blachia Baill. Euphorbiaceae (A. II. 5). 8 Indomal.
Black bead shrub (W.I.), *Pithecolobium Unguis-cati* Benth.; **-berry**, *Rubus fruticosus*, &c.; **-bindweed**, *Polygonum Convolvulus* L.; **-boy**, *Xanthorrhoea hastilis* R. Br.; **-bryony**, *Tamus communis* L.; **-butt**, *Eucalyptus pilularis* Sm. &c.; **-cap raspberry**, *Rubus occidentalis* L.; **-dammar**, *Canarium*; **-gram**, *Phaseolus Mungo* L., var. *radiatus*; **-grass** (Am.), *Juncus Gerardi* Loisel.; **-gum tree** (Am.), *Nyssa*; **-jack** (Am.), *Quercus nigra* L.; **-moss** (Am.), *Tillandsia usneoides* L.; **-mustard**, *Brassica nigra* Koch; **-oil**, *Celastrus*; **-snake-root**, *Cimicifuga* (*Actaea*) *racemosa* Nutt.; **-spleenwort**, *Asplenium Adiantum-nigrum* L.; **-thorn**, *Prunus spinosa* L.; **-wattle**, *Acacia decurrens* Willd.; **-wood**, *Acacia melanoxylon* R. Br., *Dalbergia latifolia* Roxb., &c.
Blackstonia Huds. = *Chlora* Ren. (Gentian.).
Blackwellia Comm. ex Juss. = *Homalium* Jacq. p.p. (Flacourt.).
Blackwellia Gaertn. Inc. sed. 1 sp. Habitat?
Bladder-campion, *Silene inflata* Sm.; **-fern**, *Cystopteris fragilis* Bernh.; **-nut**, *Staphylea pinnata* L.; **-seed**, *Physospermum*; **-senna**, *Colutea arborescens* L.; **-wort**, *Utricularia*.
Blaeberry, *Vaccinium Myrtillus* L.
Blaeria L. Ericaceae (IV. 1). 25 S. and trop. Afr.
Blainvillea Cass. Compositae (5). 10 cosmotrop.
Blairia Houst. ex L. = *Priva* Adans. (Verben.).
Blakea P. Br. Melastomaceae (1). 35 S. Am., W.I. Ed. fr.
Blanchetia DC. Compositae (1). 1 Bahia. Raises perspiration.
Blanchetiastrum Hassler. Malvaceae (3). 1 Brazil.

- Blancoa** Lindl. Amaryllid. (III). 1 S.W. Austr. (Haemodor. *BH.*)
- Blandfordia** Sm. Liliaceae (III). 4 E. Austr. Cult. orn. fl.
- Blanket flower**, *Gaillardia*.
- Blastania** Kotschy et Peyr. Cucurbit. (2). 3 trop. Afr. and As.
- Blastemanthus** Planch. Ochnaceae. 3 N. Brazil, Guiana. K 5 + 5.
- Blastocaulon** Ruhland (*Paepalanthus* p.p.). Eriocaul. 3 Brazil.
- Blastochore** (Cl.), a plant distr. by offshoots.
- Blastus** Lour. Melastomaceae (1). 4 E. As.
- Blatti** Adans. (*Sonneratia* L. f. *q.v.*). Sonnerat. 6 Indomal.
- Blattiaceae** = Sonneratiaceae.
- Blazing star**, *Liatris squarrosa* Willd.
- ✓ **Blechnum** L. Polypodiaceae. 220 cosmop. *B. boreale* Sw. (*B. Spicant* Roth.) in Brit. has fertile and barren l., the latter larger. Cf. Bower, Studies, *Ann. Bot.* 28, 1914, p. 363.
- Blechum** P. Br. Acanthaceae (IV. A). 4 trop. Am., W.I.
- Bleeding heart**, *Dicentra*; (W.I.), *Colocasia antiquorum*.
- Bleekrodea** Blume. Moraceae (1). 3 Madag., Borneo, Indochina.
- Blennodia** R.-Br. Cruciferae (4). 11 Austr.
- Blennosperma** Less. Compositae (6). 2 Chili, California.
- Blepharacanthus** Nees = *Blepharis* Juss. (Acanth.).
- Blepharandra** Griseb. Malpighiaceae (II). 1 Guiana.
- Blepharanthra** Schlechter. Asclep. (II. 3). 2 Damaraland.
- Blepharidachne** Hackel (*Eremochloe* Wats.). Gramin. (10). 2 W.N. Am.
- Blephariglottis** Rafn. = *Habenaria* Willd. (Orchid.).
- Blepharipappus** Hook. Compositae (5). 1 W. U.S. Many = *Layia*.
- Blepharis** Juss. Acanthaceae (IV. B). 80 palaeotrop., Medit., S. Afr.
The seeds have hairs which swell up when wetted.
- Blepharispermum** Wight ex DC. Compos. (4). 10 trop. As. and Afr.
- Blepharistemma** Benth. in Wall. Rhizophoraceae. 1 India.
- Blepharizonia** Greene. Compositae (5). 2 California.
- Blepharocalyx** Berg. (*Myrtus* p.p. *BH.*). Myrtac. (1). 3 warm S. Am.
- Blepharocarya** F. Muell. Anacard. (3). (Sapind. *BH.*) 1 E. trop. Austr.
- Blepharodon** Decne. Asclepiadaceae (II. 1). 25 Mex. to Chili.
- Blepharoneuron** Nash (*Vilfa* p.p.). Gramin. (8). 1 S.W. U.S., Mex.
- Blephilia** Rafn. Labiatae (VI). 2 N. Am.
- Bletia** Ruiz et Pav. Orchid. (II. 9). 20 trop. Am., W.I. Cult.
- Bletilla** Reichb. f. Orchidaceae (II a. II). 1 E. As.
- Blighia** Kon. Sapindaceae (1). 3 trop. Afr. *B. sapida* Kon (akee, vegetable marrow) cult. for ed. fr. (fleshy arillate seed stalk).
- Blimbing**, *Averrhoa Bilimbi* L.
- Blinding tree** (Ceylon), *Excoecaria Agallocha* L.
- Blinks**, *Montia fontana* L.
- Blinkworthia** Choisy. Convolvulaceae (1). 2 Burma.
- Blitum** (Tourn.) L. = *Chenopodium* L. p.p. (Chenopod.).
- Blood-flower**, *Haemanthus*, (W.I.) *Asclepias curassavica* L.; -leaf, *Iresine*; -lily, *Haemanthus*; -root, *Sanguinaria canadensis* L.; -wood, *Eucalyptus*, (W.I.) *Laplacea*.
- Bloomeria** Kellogg. Liliaceae (IV). 2 S. California.

- Blue-bell**, *Campanula rotundifolia* L., *Scilla festalis* Salisb. ; **-berry** (Am.), *Vaccinium* spp. ; **-bottle**, *Centaurea Cyanus* L. ; **-flag** (Am.), *Iris* ; **-grass** (Am.), *Poa pratensis* L. ; **-gum**, *Eucalyptus Globulus* Labill. ; **-lettuce** (Am.), *Mulgedium* ; **-tangle** (Am.), *Gaylussacia frondosa* Torr. et Gray ; **-weed** (Am.), *Echium*.
- Bluet**, *Vaccinium pennsylvanicum* Lam., *Houstonia*.
- Blumea** DC. Compositae (4). 80 palaeotrop. Ai or ngai camphor is distilled from *B. balsamifera* DC. (S.W. China).
- Blumenbachia** Schrad. Loasaceae. 6 temp. S. Am. Fr. very light, twisted, covered with grapnel hairs.
- Blumeodendron** Muell.-Arg. = *Mallotus* Lour. p.p. (Euphorb.).
- Blunt**, with rounded end.
- Blysmus** Panz. = *Scirpus* Tourn. p.p. (Cyper.).
- Blyxa** Noronha. Hydrocharidaceae. 10 | ✕ warm.
- Blyxopsis** O. Ktze. (*Enhydrias* Ridl.). Hydrocharid. 1 Malay Penin.
- Bo** (Ceylon), *Ficus religiosa* L.
- Bobartia** L. Iridaceae (II). 10 S. Afr. L. sword-like or centric.
- Bobea** Gaudich. Rubiaceae (II. 2). 5 Sandwich Is.
- Bobua** DC. = *Symplocos* L. p.p. (Symploc.).
- Bocagea** St. Hil. Anonaceae (I). 10 trop. Am. and As.
- Bocconia** Plum. ex L. (*BH.* incl. *Macleya* Reichb.). Papaveraceae (II). 2 Mex. to Peru, W.I. Apetalous.
- Bocoa** Aubl. (*Inocarpus* Forst. *BH.*). Leguminosae (III. 8). 1 Guiana. The seeds are ed.
- Bocquillonia** Baill. Euphorbiaceae (A. II. 2). 6 New Caled.
- Bodiniera** Leveillé et Vaniot. Ranunc. (2). 1 China.
- Bodiniieriella** Leveillé. Ericaceae (II. 1). 1 China.
- Boea** Comm. ex Lam. Gesneriaceae (I). 25 trop. As. and Austr.
- Boebera** Willd. = *Dyssodia* Cav. p.p. (Compos.).
- Boeberastrum** Rydberg (*Dyssodia* p.p.). Compos. (10). 3 S.W. U.S.
- Boeckeleria** T. Durand (*Decalepis* Boeck.). Cyper. (II). 1 S. Afr.
- Boehmeria** Jacq. Urticaceae (3). 60 trop. and N. subtrop. *B. nivea* Gaudich. has good drip-tips (*cf.* *Acer*). It is cult. in China for the fibre (China grass, rhea) obtained from the inner bark (*cf.* *Linum*), perhaps the longest, toughest, and most silky of all veg. fibres, but most difficult to prepare. In the trop. the var. *tenacissima* (ramie) is cult.
- Boehmeriopsis** Komarow. Urticaceae (3). 1 Corea.
- Boeica** C. B. Clarke. Gesneriaceae (I). 6 S.E. As.
- Boenninghausenia** Reichb. Rutaceae (II). 1 Khasias to Japan.
- Boerhaavia** Vaill. ex L. Nyctaginaceae. 40 cosmop. Anthocarp often glandular, aiding in seed-dispersal.
- Boerlagea** Cogn. Melastomaceae (I). 1 Borneo.
- Boerlagella** Pierre. Sapotaceae (II). 1 Sumatra.
- Boerlagiodendron** Harms. Araliaceae (I). 20 Malaya.
- Bog-asphodel**, *Narthecium ossifragum* Huds. ; **-bean**, *Menyanthes trifoliata* L. ; **-myrtle**, *Myrica Gale* L. ; **-rush** (Am.), *Juncus*.
- Bogoria** J. J. Sm. Orchidaceae (II. 20). 1 Java.
- Bois fidèle**, *Citharexylum* ; **-immortelle**, *Erythrina umbrosa*.
- Boisduvalia** Spach (*Oenothera* p.p. *BH.*). Onagr. (2). 8 W. coast Am.

- Boissiera** Hochst. et Steud. Gramineae (10). 1 W. As.
Bojeria DC. (*Inula* p.p. *EP.*). Compositae (4). 3 Madag., S. Afr.
Bolandra A. Gray. Saxifragaceae (1). 2 Pac. N. Am.
Bolanosa A. Gray. Compositae (1). 1 Mex.
Bolax Comm. ex Juss. = *Azorella* Lam. (Umbell.).
Bolbophyllaria Reichb. f. Orchidaceae (II. 16). 6 trop.
Bolbophyllum Spreng. = *Bulbophyllum* Thou. (Orchid.).
Bolboschoenus Palla (*Scirpus* p.p.). Cyper. (1). 1 cosmop.
Bolboxalis Small (*Oxalis* p.p.). Oxalidaceae. 1 S. Afr.
Boldo, *Peumus Boldus* Molina.
Boldoa Cav. Nyctaginaceae. 2 Mex., W.I.
Boldoa Endl. = *Peumus* Molina. (Monim.)
Bole, straight main trunk.
Boleum Desv. Cruciferae (2). 1 Spain.
Bolivaria Cham. et Schlecht. = *Menodora* Humb. et Bonpl. p.p.
Boll, a capsule, especially of cotton.
Bollea Reichb. f. (*Zygopetalum* p.p. *BH.*). Orchid. (II. 14). 3 W. trop. Am.
Bollwilleria Zabel (*Pyrus* p.p.). Rosaceae (II). 2 Eur., Medit.
Boltonia L'Herit. Compositae (3). 4 U.S.
Bolusanthus Harms (*Lonchocarpus* p.p.). Legum. (III. 1). 1 S. Afr.
Bolusia Benth. Leguminosae (III. 6). 1 S. Afr.
Bomarea Mirb. Amaryllidaceae (III). 90 Mex., C. and S. Am. L. like *Alstroemeria*. Often climbing. Umbels cymose. Cult. orn. fl.
Bombacaceae (*EP.*; *Malvaceae* p.p. *BH.*). Dicots. (Archichl. Malvales). 20 gen., 140 sp., trop., esp. Am. Trees, often very large, with thick stems, sometimes egg-shaped owing to formation of water storage tissue; l. entire or palmate, with deciduous stips. Fl. ♂, often large, usu. reg. K (5), valvate, often with epicalyx; C 5, conv., pets. asymmetric; A 5—∞, free or united into a tube, pollen smooth; $\overline{G}$ (2—5), in the latter case the cpls. opp. the pets., multiloc.; style simple, lobed or capitate; ovulus 2—∞ in each loc., erect. anatr. Capsule; seeds smooth, often embedded in hairs springing from wall; endosp. little or 0. The *Adansoniae* are $\pm$ myrmecophilous (cf. *Acacia*), with extrafloral nectaries on l., K, or fl. stalk. Chief genera *Adansonia*, *Bombax*, *Chorisia*, *Durio*, *Eriodendron*.
Bombax L. (incl. *Pachira* Aubl. *EP.*). Bombacaceae. 60 trop. *B. malabaricum* DC. (cotton-tree, Ind., Ceylon) drops its l. in Dec. and remains leafless till Apr., but fls. in Jan. The cotton is used for cushions, &c. Dug-out canoes are made of the soft wood.
Bombay aloe, *Agave*; -hemp, *Crotalaria*, *Agave*.
Bombycidendron Zoll. et Morr. (*Hibiscus* p.p.). Malv. (4). 4 Phil. Is.
Bombycinus (Lat.), silky.
Bombynia Nor. Inc. sed. Nomen.
Bonace (W.I.), *Daphnopsis*.
Bonamia Thou. Convolvulaceae (1). 3 Sandwich Is., Madag.
Bonania A. Rich. Euphorbiaceae (A. II. 7). 6 Cuba.
Bonannia Guss. Umbelliferae (III. 6). 2 S. Eur.
Bonapartea Haw. = *Agave* L. (Amaryll.).
Bonatea Willd. (*Habenaria* p.p.). Orchid. (II. 1). 5 trop. and S. Afr.
Bonatia Schlechter et Krause. Rubiaceae (1. 8). 1 New Caled.

- Bonaveria** Scop. (*Securigera* DC.). Legum. (III. 5). 1 Medit.
Bonavist (W.I.), *Dolichos Lablab* L.
Boneset (Am.), *Eupatorium*.
Bongardia C. A. Mey (*Leontice* p.p. *EP.*). Berberid. 1 E. Medit.
Bonia Bal. Gramineae (13). 1 Tonquin.
Boninia Planch. Rutaceae (1). 2 Bonin Is.
Bonjeania Reichb. = *Dorycnium* L. p.p. (Legum.).
Bonnaya Link et Otto (*Ilysanthes* p.p. *EP.*). Scroph. (II. 6). 5 Warm.
Bonnetia Mart. et Zucc. Theaceae. 5 trop. Am.
Benniera Cordemoy. Orchidaceae (II. 20). 2 Réunion.
Bonnierella Viguier (*Panax* p.p.). Araliaceae (1). 2 Tahiti.
Bonplandia Cav. Polemoniaceae. 2 Mex.
Bontia L. Myoporaceae. 1 W.I.
Bonyunia Schomb. Loganiaceae. 3 Guiana, Brazil.
Boopis Juss. Calyceraceae. 25 Andes, Argentina.
Boottia Wall. Hydrocharidaceae. 20 palaeotrop.
Boquila Decne. Lardizabal (Berber. *BH.*). 1 Chili.
Borage, *Borago officinalis* L.

Boraginaceae (*EP.*, *BH.*). Dicots. (Sympet. Tubiflorae; Polemoniales *BH.*). 85 gen. 1600 sp., trop. and temp., esp. Medit. Most are herbs, perenn. by fleshy roots, rhiz., &c.; a few shrubs and trees. L. usu. alt., exstip., generally, as well as the rest of the plant, covered with stout hairs (hence the name *Asperifoliae*, by which the B. are sometimes known). Infl. a coiled cincinnus, sometimes double, with a marked dorsiventrality. As the fls. open it uncoils, so that the newly opened fls. face always in the same direction. The morphology of this infl. is but imperfectly understood; adnation or concrescence occurs, and apparently dichotomy at the growing apex. The general agreement is, however, in favour of the view that the "boragoid," as it is sometimes called, is composed of dorsi-ventral monopodia. Cf. *Nat. Pfl.*, Müller in *Flora*, 94, Schumann, *Morphol. Studien*, II.

Fl. ♀, usu. reg., hypog., and 5-merous. K (5), imbr. or open, rarely valvate, the odd sepal post.; C (5), funnel-shaped or tubular, the limb usu. flat; A 5, epipet., alt. to petals, anthers introrse; $\bar{G}$ (2), on hypog. disc, usu. 4-loc. by "false" septum (see Labiatae), usu. with gynobasic style; ovules 1 in each loc., erect, anatropous. Fr. a drupe or 4 achenes. Seed with straight or curved embryo in usually slight endosp.; the radicle directed upwards. [Cf. § V.]

The floral arrangements are interesting. Most B. have a short tube, partly concealing the honey; many (esp. IV. 1 and 3) have scales projecting inwards from the throat of the corolla, fully concealing the honey, protecting it from robbery and narrowing the entrance, so that visiting insects must take a definite track. "Many sp., in the course of their individual development, seem to



Floral diagram of *Anchusa*;
after Eichler.

recapitulate to us the evolution of their colours—white, rosy, blue in several sp. of *Myosotis*; yellow, bluish, violet in *M. versicolor*; and red, violet, blue in *Pulmonaria*, *Echium*, &c. Here, white and yellow seem to have been the primitive colours." (Müller.) Many B. are heterostyled, e.g. *Pulmonaria*. The fls. of many sp. are pendulous (and thus bee-flowers), e.g. *Borago*, *Symphytum*. *Echium* is gynodioecious.

Classification and chief genera (after Gürke):

- I. *CORDIOIDEAE* (drupe; style terminal: twice bi-lobed): *Cordia*.
- II. *EHRETIOIDEAE* (do.; style simple or bi-lobed or double; no ring of hairs): *Ehretia*.
- III. *HELIOTROPIOIDEAE* (do., do., but ring of hairs near tip of style): *Tournefortia*, *Heliotropium*.
- IV. *BORAGINOIDEAE* (style gynobasic: achenes).
 1. *Cynoglosseae* (fl. reg.; base of style more or less conical; tips of achenes not projecting above pt. of attachment): *Omphalodes*, *Cynoglossum*, *Rindera*.
 2. *Eritrichieae* (do., but tips projecting above pt. of attachment): *Echinosperrum*, *Eritrichium*, *Cryptanthus*.
 3. *Anchuseae* (fl. reg.; base of style flat or slightly convex; achenes with concave attachment surface): *Symphytum*, *Borago*, *Anchusa*, *Alkanna*, *Pulmonaria*.
 4. *Lithospermeae* (do., but surface of attachment flat): *Myosotis*, *Lithospermum*, *Arnebia*, *Cerinthe*.
 5. *Echieae* (fl. zygomorphic): *Echium*.
- V. *WELLSTEDIOIDEAE* (4-merous; ov. compressed, 2-loc. with one pend. ov. in each; caps.): *Wellstedtia*.

Boragineae (BH.) = Boraginaceae.

Boraginodes Post et O. Ktze. (*Trichodesma* p.p.). Borag. (IV. 1). 1 Somaliland.

Borago L. Boraginaceae (IV. 3). 3 Medit., Eur., As. *B. officinalis* L. Brit. (borage) cult. for bee feeding. It has a typical bee-fl. The blue pendulous fl. secretes honey below the ovary; the elastic stamens form a cone and dehisce introrsely from apex to base, the pollen ripening gradually and trickling into the tip of the cone. Insects probing for honey dislocate the stamens, receiving a shower of pollen (cf. *Erica*, *Galanthus*, *Cyclamen*). In older fls. the stigma, now ripe, projects beyond the stamens so as to be touched first.

Boragoid, Boraginaceae.

Borassodendron Becc. Palmae (II). 1 Perak.

Borassus L. Palmae (II). 2 palaeotrop. *B. flabellifer* L. (Palmyra palm) cult. in Ceylon, India, &c. Dioecious. Its uses are legion; an old Tamil song enumerates 801. The wood of the trunk is very hard and durable, and resists salt water; it is also used for rafters, well-sweeps, &c. The large fan-shaped l. are used as thatch, and made into olas or writing "paper" sheets, the writing being done upon them with a stylus. From the base of the l. Palmyra fibre is collected, and used for making brushes, &c. The split l. are woven into mats, baskets, &c. The fr. is eaten roasted, and the infl. is tapped for toddy (cf. *Cocos*, *Agave*) from which sugar or jaggery is

made, as well as vinegar, &c. The young seedlings are also eaten and yield a good flour when ground, and there are many other uses.

Borbonia L. Leguminosae (III. 3). 15 S. Afr.

Borderea Miègeville (*Dioscorea* p.p. BH.). Dioscor. 1 Pyrenees, 1 Chili.

Borea Zipp. Inc. sed. Nomen.

Boreava Jaub. et Spach. Cruciferae (2). 2 E. Medit.

Borecole, *Brassica oleracea* L. var.

Boree (Austr.), *Acacia pendula* A. Cunn.

Boretta Neck. = *Daboecia* D. Don (Eric.).

Borneo camphor, *Dryobalanops aromatica* Gaertn.; -**rubber**, *Willughbeia edulis* Roxb., &c.

Bornmuellera Hausskn. Cruciferae (4). 1 E. Medit.

Boronella Baill. Rutaceae (III). 2 New Caled.

Boronia Sm. Rutaceae (I). 65 Austr.

Borreria G. F. W. Mey. (*Spermacoce* L.). Rubi. (II. 10). 95 trop.

Borrichia Adans. Compositae (5). 6 warm Am., W. I.

Borsczowia Bunge. Chenopodiaceae (B). 1 Aral plain.

Borthwickia W. W. Smith. Capparidaceae (II). 1 Burma.

Borya Labill. Liliaceae (III). 2 Queensland, W. Austr.

Borzicactus Riccobono (*Cereus* p.p.). Cactac. (III. 1). 1 Ecuador.

Boschia Korth. Bombacaceae. 4 Malaya.

Boschniakia C. A. Mey. Orobanchaceae. 1 N.E. As., N.W. N. Am.

Boscia Lam. Capparidaceae (II). 20 trop. Afr.

Bosea L. Amarantaceae (2). 3 Medit., India.

Bosistoa F. Muell. Rutaceae (I). 2 E. Austr.

Bosleria Aven Nelson. Solanaceae (2). 1 Nevada.

Bosqueiopsis de Wild. et Durand. Morac. (II). 2 trop. Afr.

Bosquiea Thou. Moraceae (II). 4 Madag., trop. Afr.

Boss, a protuberance.

Bossekia Necker (*Rubus* p.p.). Rosaceae (III. 2). 2 N. Am.

Bossiaea Vent. Leguminosae (III. 3). 35 Austr. Several xero. sp. have flattened green stems (phylloclades) with minute scaly l. As in *Acacia*, &c., seedlings show transitions from l.

Bostrychanthera Benth. Labiatae (III). 1 China.

Bostryx, a monoch. cyme where each lat. branch falls upon the same side of relatively main axis, *Begonia*, *Butomus*, *Hemerocallis*, *Hypericum*, *Liliaceae*.

Boswellia Roxb. ex Colebr. Burseraceae. 10 trop. As. and Afr. *B. Carteri* Birdw. (Somaliland, &c.) and other sp. yield the resin frankincense or gum-olibanum, formerly offic., now used in incense. Other sp. also yield fragrant resins. *B. serrata* Roxb., an important tree on dry hills in India.

Bothriochloa O. Ktze. (*Andropogon* p.p.). Gramin. (2). 1 Annam.

Bothriocline Oliv. Compositae (I). 10 trop. Afr.

Bothriospermum Bunge. Boragin. (IV. 2). 5 trop. and N.E. As.

Bothriospora Hook. f. Rubiaceae (I. 8). 1 Guiana.

Botryanthus Kunth = *Muscari* Mill. p.p. (Liliaceae).

Botryceras Willd. (*Laurophyllus* EP.). Anacard. (3). 1 S. Afr.

Botrychium Sw. Ophioglossaceae. 40 cosmop. *B. Lunaria* Sw. (moonwort) in Brit. Habit like *Ophioglossum*, but the sterile as

well as the fertile part of the l. is usu. branched. The r. appear one at the base of each l., and branch monopodially. The spike is usu. much branched, the ultimate twigs being the sporangia.

B. Lunaria has no veg. repr. like *Ophioglossum*, and each new pl. comes from a prothallus, which is small, not > 1 or 2 mm. long, oval, saprophytic, buried to a depth of 1-10 cm. In *B. virginianum* Sw. it is as much as 20 mm. long, and seems to remain attached to the sporophyte for 5 or 6 years. The prothallus has a mycorrhiza. (Jeffrey, *Univ. of Toronto Studies*, 1898; Bruchmann in *Flora*, 96, 1906, p. 203.)

Botrymorus Miq. (*Pipturus* Wedd. *EP.*). Urtic. (3). 1 Malaya.

Botryophora Hook. f. Euphorbiaceae (B. II). 1 Perak.

Botryopleuron Hemsl. Scrophulariaceae (III. 1). 5 China.

Botryose, racemose.

Bottionea Colla. Liliaceae (III). 1 Chili.

Bottle-brush, *Callistemon*; -cod-root (W.I.), *Capparis*; -gourd, *Lagenaria*; -grass (Am.), *Setaria viridis* Beauv.

Boucerosia Wight et Arn. (*Caralluma* p.p. *EP.*). Asclepiad. (II. 3). 30 trop. Afr. and As.

Bouchardatia Baill. (*Melicope* BH.). Rutac. (1). 1 E. Austr.

Bouchea Cham. Verbenaceae (2). 20 trop.

Bouchetia DC. Solanaceae (4). 3 Texas to Brazil.

Bouea Meissn. Anacardiaceae (1). 4 Malaya.

Bouetia A. Chevalier. Labiatae (VII). 1 Dahomey.

Bougainvillaea Comm. ex Juss. Nyctaginaceae. 12 S. Am. The group of 3 fls. is surrounded by 3 lilac or red persistent bracts.

B. spectabilis Willd. is a splendid flowering creeper often cult.

Bougueria Decne. Plantaginaceae. 1 Andes.

Bourgeon, to bud or sprout.

Bourgia Scop. Boraginaceae (inc. sed.). Nomen.

Bournea Oliv. Gesneriaceae (1). 1 China.

Bourreria P. Br. (*Beureria* Jacq.). Boragin. (II). 30 trop. Am., W. Ind.

Bousigonia Pierre. Apocynaceae (I. 1). 3 Cochinchina.

Boussingaultia H. B. et K. Basellaceae. 10 trop. Am. Tubers ed.

Bouteloua Lag. Gramineae (II). 40 Canada to S. Am., mainly in SW. U.S. (mesquit grasses, grama, side-oats). They form a large proportion of the herbage of the prairie, and are valuable as fodder.

Boutonia DC. (*Periblema* DC. BH.). Acanth. (IV. A). 1 Madag.

Bouvardia Salisb. Rubiaceae (I. 5). 30 trop. Am. Some heterostyled like *Primula*. Cult. orn. perf. fls.

Bouzetia Montr. Rutaceae (inc. sed.). 1 New Caled.

Bowdichia H. B. et K. Legumin. (III. 1). 2 trop. S. Am. Good wood.

Bowenia Hook. Cycad. 1 Queensland, *B. spectabilis* Hook., easily recognized by the bipinnate l. The upper part of the main r. gives rise to curiously branched apogeotropic r., which contain *Anabaena* (an alga) living in symbiosis, and branch exogenously (*Ann. Bot.*, 1898).

Bowiea Harv. Liliaceae (III). 1 S. Afr., *B. volubilis* Harv., a xero. like *Testudinaria*, with a large partly underground stock (corm),

giving off each year a much-branched climbing stem. This bears small l., but they soon drop, and assim. is carried on by the green stem.

Bowkeria Harv. Scrophulariaceae (II. 4). 7 S. Afr.

Bowlesia Ruiz. et Pav. Umbelliferae (I. 2). 20 Am.

Bowringia Champ. Leguminosae (III. 1). 1 Hongkong.

Bowstring hemp, *Sansevieria zeylanica* Willd.

Bow-wood, *Maclura aurantiaca* Nutt.

Box, *Buxus*; (Austr.) *Eucalyptus*; **jasmine-**, *Phillyrea*; **Maracaibo** or **W. Indian-**, *Casearia praecox* Griseb.; **-wood** (W.I.), *Vitex umbrosa* Sw.

Boykinia Nutt. Saxifragaceae (I). 8 N. Am., Japan.

Brabejaria Burm. f. Inc. sed. 1 S. Afr.

Brabejum L. Proteaceae (I). 1 S. Afr., *B. stellatifolium* L. (wilde castanjes), whose seeds are eaten roasted.

Bracea Britton. Apocynaceae (inc. sed.). 1 Bahamas.

Bracea King = *Sarcosperma* Hook. f. (Sapot.).

Brachialis (Lat.), a cubit long; **brachiate**, with spreading branches.

Brachiararia Griseb. = *Panicum* L. p.p. (Gram.).

Brachiolobos All. = *Nasturtium* R. Br. (Crucif.).

Brachionidium Lindl. Orchidaceae (II. 8). 6 W.I., trop. S. Am.

Brachistus Miers. Solanaceae (2). 20 Cent. and S. Am.

Brachtia Reichb. f. Orchid. (II. 19). 3 Colombia.

Brachy- (Gr. pref.), short.

Brachyachaenium Baker (*Dicome* p.p.). Compos. (12). 1 Madag.

Brachyactis Ledeb. (*Aster* p.p. *EP.*). Compos. (3). 6 N. As., N. Am.

Brachyandra Phil. Compositae (2). 2 Chili.

Brachybotrys Maxim. Boraginaceae (IV. 1). 1 China.

Brachycarpaea DC. Cruciferae (1). 1 S. Afr.

Brachychaeta Torr. et A. Gray. Compos. (3). 1 S. U.S.

Brachychilum Petersen. Zingiberaceae (1). 1 Java.

Brachychiton Schott et Endl. (*Sterculia* L. p.p. *BH.*). Sterculiaceae. 11 Austr. *B. rupestris* K. Schum. (bottle tree) has swollen stems, *B. acerifolius* N. Muell. (flame tree) very fine fl.

Brachyclados D. Don. Compositae (12). 1 S. Andes.

Brachycome Cass. Compositae (3). 50 Austr., N.Z., N. Am., Afr.

Brachycorythis Lindl. Orchidaceae (II. 1). 12 W. and S. Afr.

Brachyelytrum Beauv. Gramineae (8). 4 warm Am., Afr.

Brachyglottis Forst. Compositae (8). 1 N.Z.

Brachygyne Small (*Seymeria* p.p.). Scroph. (III. 2). 1 N. Am.

Brachylaena R. Br. Compositae (4). 10 S. and trop. Afr. Shrubs.

Brachylepis C. A. Mey. = *Anabasis* L. p.p. (Chenopod.).

Brachylepis Wight et Arn. Asclepiadaceae (1). 1 Nilgiris.

Brachyloma Sond. Epacridaceae. 7 Austr.

Brachylophon Oliv. Malpighiaceae (1). 3 Malay Penins.

Brachynema Benth. Ebenaceae. 1 N. Brazil.

Brachyotum Triana. Melastomaceae (1). 35 S. Am.

Brachypodium Beauv. Gramineae (10). 10 temp., and Mts. of trop. 2 Brit. (false brome grass). Leaf reversed (cf. *Alstroemeria*).

Brachypterys A. Juss. Malpighiaceae (1). 3 trop. S. Am., W.I.

Brachyris Nutt. = *Gutierrezia* Lag. p.p. (Compos.).

- Brachysema** R. Br. Leguminosae (III. 2). 15 Austr.
- Brachysiphon** A. Juss. Penaeaceae. 5 S. Afr.
- Brachystegia** Benth. Leguminosae (II. 3). 20 trop. Afr.
- Brachystelma** R. Br. Asclepiadaceae (II. 3). 50 palaeotrop. *B. Bingeri* A. Chev. has an ed. tuber.
- Brachystelmaria** Schlechter. Asclepiad. (II. 3). 6 S. Afr.
- Brachystemma** D. Don (*Arenaria* p.p. *BH.*). Caryoph. (I. 1). 1 Himal.
- Brachystephanus** Nees. Acanthaceae (IV. B). 10 trop. Afr., Madag.
- Brachythalamus** Gilg. Thymelaeaceae. 2 New Guinea.
- Brachytome** Hook. f. (*Randia* p.p. *EP.*). Rubiaceae (I. 8). 2 Indomal.
- Bracken**, *Pteridium aquilinum* (L.) Kuhn.
- Brackenridgea** A. Gray. Ochnaceae. 10 palaeotrop.
- Bract**, the l. in whose axil a fl. arises; **coloured-**, *Amherstia*, *Bougainvillaea*, *Castilleja*, *Euphorbia*, *Salvia*, &c.; **persistent-**, forming wings to fr., *Bougainvillaea*, *Carpinus*, *Mirabilis*, *Spinacia*; **bracteate**, bearing bracts; **bracteole**, a bractlet, borne on same axis as the fl.
- Bradburia** Torr. et Gray. Compositae (3). 2 Texas, Mexico.
- Bradburya** Rafin. (*Centrosema* Benth. *BH.*). Legu. (III. 10). 30 Am.
- Bradleia** Banks = *Glochidion* Forst. (Euph.).
- Bragantia** Lour. (*Apama* Lam. p.p.). Aristoloch. 5 Indomal.
- Brahea** Mart. Palmae (I. 2). 4 Mexico, Texas. Decorative.
- Brainea** J. Sm. Polypodiaceae. 1 E. As., *B. insignis* Sm., a dwarf tree-fern. The primary veins branch and rejoin repeatedly, forming small areas in the leaf; the veinlets run parallel and distinct.
- Brake**, *Pteridium aquilinum* (L.) Kuhn; **curled rock-**, *Cryptogramme crispa* R. Br.
- Bramble**, *Rubus*.
- Branch**, an outgrowth of r. or shoot which repeats its structure; usu. lat. (not dichotomous), exogenous in case of shoot, endogenous in r. In many ferns the branches are on the l. bases, but in *Equisetum* and fl. plants are usu. axillary. Usu. only one in each axil; if more than one, the others are **accessory**; if side by side, **collateral**, *Allium*, *Araceae*, *Crataegus*, *Liliaceae*, *Muscari*, *Quercus*, *Salix*; if one above the other, **serial**, *Aristolochia*, *Calycanthus*, *Cercis*, *Colletia*, *Fuchsia*, *Gleditschia*, *Robinia*, *Syringa*. Branches of two kinds—long and short shoots, or shoots of unlimited and limited growth—occur in *Pinus* and other *Coniferae*, *Berberis*, *Cactaceae*, *Ginkgo*, *Spergula*. Branching may be of two types—**monopodial**, *Pinus* and other *Coniferae*, *Orchidaceae*, *Paris*, *Pothos*, or **sympodial**, *Acorus*, *Aglaonema*, *Ancistrocladus*, *Anonaceae*, *Anthurium*, *Araceae*, *Asarum*, *Eichhornia*, *Fagus*, *Iridaceae*, *Iris*, *Juncus*, *Liliaceae*, *Narthecium*, *Orchidaceae*, *Peperomia*, *Pistia*, *Polygonatum*, *Pontederiaceae*, *Potamogeton*, *Ranunculus*, *Rhaphidophora*, *Ulmaceae*, *Vitis*, *Zostera*. And cf. Buds, Concrecence, &c.
- Branda** (W. I.), *Chione glabra* DC.
- Brandegea** Cogn. Cucurbitaceae (4). 2 California.
- Brandesia** Mart. = *Telanthera* R. Br. (*BH.*) = *Alternanthera* Forsk.
- Brandisia** Hook. f. et Thoms. Scrophular. (II. 4). 3 Burma, China.

Brandy-bottle, *Nuphar luteum* Sibth. et Sm.

Brandzeia Baill. Leguminosae (II. 1). 1 Seychelles, Madagascar.

Brasenia Schreb. Nymphaeaceae (II). 1 cosmop., exc. Eur. A 12 or more.

Brassaia Endl. (*Schefflera* EP.). Araliaceae (1). 3 Malaya.

Brassaiopsis Dcne. et Planch. Araliaceae (1). 10 Indomal.

Brassavola R. Br. Orchidaceae (II. 6). 24 trop. Am.

Brassia R. Br. Orchidaceae (II. 19). 30 trop. Am.

Brassica (Tourn.) L. (*BH.* incl. *Erucastrum* Presl and *Sinapis* L.). Cruciferae (2). 85 Eur., Medit., As. 7 in Brit. Many forms are cult., some for the flr., others for the stem, root, leaf, or seed. *B. nigra* Koch is the black mustard, whose seeds yield the condiment. *B. oleracea* L. is the cabbage, with the various races derived from it, such as cauliflower and broccoli (fleshy infl.), kale or curly greens or borecole, brussels-sprouts (a form in which miniature cabbages are produced in all the leaf-axils on the main stem), kohl-rabi or knolkohl (trop.) (a thickened stem, or corm, showing leaf scars on its surface), &c. *B. campestris* L. is the turnip, a biennial with thickened root, and a var. of it—*B. Napus* L.—is the rape, used in salads and in the preparation of rape- or colza-oil, expressed from the seeds. [See De Candolle's *Orig. of Cultiv. Plts.*] It is of interest to notice the great variety of morphology in the veg. organs, correlated with the different ways in which storage of reserve materials is effected, in the root, stem, leaf, flowerstalk, &c.

Sauer-kraut, or salted cabbage, made by packing cabbage shreds in barrels with salt and pepper, and slightly fermenting, is a favourite food in Germany, esp. for winter use.

The outer coat of the seed has mucilaginous cell-walls which swell when wetted (cf. *Linum*).

Brassocattleya × Rolfe. Hybrid, *Brassavola* × *Cattleya*; others are *Brassolaelia*, *Brassoepidendrum*, *Brassocattlaelia* (triple).

Brathys Mutis ex L. f. = *Hypericum* Tourn. p.p. (Guttif.).

Brauna, *Melanoxydon* Brauna Schott.

Bravaisia DC. Acanthaceae (IV. A). 2 trop. Am., W. I.

Bravoa Lex. Amaryllidaceae (II). 5 Mexico. Rhizome with tuberous roots. Fl. zygomorphic by bending.

Braya Sternb. et Hoppe. Cruciferae (4). 18 Eur., As., S. Am.

Brayera Kunth. (*Hagenia* Willd.) Rosaceae (III. 5). 1 Abyssinia.

The dried ♀ fls. (Koso) are used as a remedy for tapeworm.

Brayodendron Small (*Diospyros* p.p.). Ebenaceae. 1 Texas, Mex.

Brayopsis Gilg et Muschler (incl. *Draba* p.p.). Cruc. (2). 10 Andes.

Brayulinea Small (*Guilleminea* p.p.). Amarant (3). 1 Ecuador.

Brazil-cherry, *Eugenia* spp.; -nut, *Bertholletia excelsa* H. et B.; -wood, *Caesalpinia Sappan* L. &c.; -ian arrowroot, *Manihot utilisima* Pohl, *M. Aipi* Pohl; -nutmeg, *Cryptocarya moschata* Nees & M.

Braziletto (W. I.), *Caesalpinia*, *Peltophorum*, *Sciadophyllum*, *Weinmannia*.

Brazoria Engelm. et Gray. Labiatae (VI). 2 Texas.

Braszeia Baill. Tiliaceae. 2 W. trop. Afr.

Bread-fruit, *Artocarpus incisa* L.; **Nicobar-**, *Pandanus*; -nut, *Brosimum*, (Barbados) *Artocarpus*.

- Bredemeyera** Willd. Polygalaceae. 30 Austr., Tasmania.
Bredia Blume. Melastomaceae (I). 3 Japan, China.
Bremontiera DC. (*Indigofera* p.p. *EP.*). Legum. (III. 6). 1 Masc.
Breonia A. Rich. Rubiaceae (I. 6). 6 Madag., Mauritius.
Bretschneidera Hemsl. Hippocast. (Sapind. *BH.*) 1 China.
Brevi- (Lat. pref.), short; **-lobous**, -lobed, &c.
Brevoortia Wood. Liliaceae (IV). 1 Calif.
Breweria R. Br. Convolvulaceae (I). 25 trop. and sub trop.
Brexia Noronha. Saxifragaceae (V). 1 Madag., Seychelles.
Breynia Forst. Euphorbiaceae (A. I. 1). 20 trop. As., Austr.
Briar, *Rosa*; **-wood**, *Erica scoparia* L.
Brichettia Pax. Euphorbiaceae (A. I. 1). 1 Somaliland.
Brickellia Ell. Compositae (2). 75 trop. and sub trop. Am.
Bridelia Willd. Euphorbiaceae (A. I. 2). 40 palaeotrop.
Bridgesia Bert. ex Cambess. Sapindaceae (I). 1 Chili.
Bridgesia Hook. et Arn. = *Ercilla* A. Juss. (*BH.*) = *Phytolacca* L. p.p.
Brieya de Wild. Anonaceae (2). 1 Belgian Congo.
Brighamia A. Gray. Campanulaceae (III). 1 Sandwich Is.
Brillantaisia Beauv. Acanth. (IV. A). 20 trop. Afr., Madag. The posterior sta. are perfect (only case in family).
Brinjal, egg-fruit, *Solanum Melongena* L.
Briquetia Hochreutiner. Malvaceae (2). 1 Paraguay.
Brissonia Neck. = *Indigofera* L. and *Tephrosia* Pers.
Bristle-fern, *Trichomanes*.
Britoa Berg. (*Campomanesia BH.*). Myrtac. (I). 10 Brazil. Ed. fr.
Brittenia Cogn. Melastomaceae (I). 1 Borneo.
Brittonastrum Briq. Labiatae (VI). 15 Mex., SW. U.S.
Brittonella Rusby (*Mionandra EP.*). Malpigh. (I). 1 Bolivia.
Briza L. Gramineae (10). 12 temp. 2 Brit. (quake-grasses).
Brizopyrum J. Presl (*Distichlis BH.*). Gram. (10). 7 S. Afr.
Brizula Hieron. (*Aphelia BH.*). Centrolep. 5 S. Austr., Tasm.
Broad bean, *Vicia Faba* L.; **-leaf tree** (W. I.), *Terminalia latifolia* Sw.
Brocchinia Schult. f. Bromeliaceae (3). 3 trop. Am., W. Ind.
Broccoli, *Brassica oleracea* L., var.
Brochoneura Warb. Myristicaceae. 4 Madag., E. Afr.
Brodiaea Sm. Liliaceae (IV). 50 W. Am. Fls. in cymose umbels.
 The sta. have curious projecting appendages. Cult. orn. fl.
Brombya F. Muell. (*Melicope* p.p. *EP.*). Rutac. (I). 1 Austr.
Brome grass, *Bromus*; **false-**, *Brachypodium*.
Bromelia Plum. ex L. Bromeliaceae (4). 10 W. I., Brazil. Some ed. fr.
Bromeliaceae (*EP.*, *BH.*). Monocotyledons (Farinosae; Epigynae *BH.*).
 40 gen., 1000 sp. trop. Am. Many terrestrial pl. (xero., living on rocks &c.), but the bulk of the sp., by virtue of their good seed-distribution and their xero. habit, have become epiph., forming a very char. feature in the veg. of trop. Am., more so than the orchids, which they surpass in number of individuals though not of sp. Most have a very reduced stem, bearing a rosette of fleshy l. channelled on the upper surface and fitting closely together by their bases, so that the whole pl. forms a kind of funnel, usu. full of water. In this are dead l., decaying animal matter and other débris (certain sp. of *Utricularia* live only in these pitchers). There are a number of adv. r.

which fasten the plant to its support, but which do not aid in its nutrition, or very little. The bases of the l. are covered with scaly hairs by which the water in the pitcher is absorbed. Water is stored in the l., which consist largely of water-tissue. They have a thick cuticle and often bear scaly hairs that reduce transpiration. Some show a totally different habit to this, *e.g.* *Tillandsia usneoides* (q.v.). [See Schimper, *Epiph. Veg. Amerikas.*]

Infl. usu. out of the centre of the pitcher; bracts coloured. Fl. usu. ♀, reg., 3-merous. P. 3 + 3 or (3) + (3), the outer whorl sepaloid, persistent, the inner petaloid; A 6, introrse, often epipet.; G (3), inf., semi-inf., or sup., 3-loc., with ∞ anat. ov. on the axile plac. in each. Style 1, stigmas 3. Berry or caps.; seeds in the latter case very light, or winged. Embryo small, in mealy endosp.

Classification and chief genera (after Wittmack):

1. *Tillandsieae* (caps.; ov. sup.; l. entire; seed hairy): *Tillandsia*.
2. *Puyeeae* (caps.; ov. sup.; l. thorny; usu. large stem): *Puya*, *Dyckia*.
3. *Pitcairnieae* (caps.; ov. semi-inf. or almost sup.; l. entire, or toothed at base, rarely at top); *Pitcairnia*.
4. *Bromelieae* (berry; ovary inf.; l. with thorny teeth): *Bromelia*, *Ananas*, *Billbergia*, *Aechmea*.

Bromheadia Lindl. Orchidaceae (II. 5). 6 Malaya.

Bromus Dill. ex L. Gramineae (10). 70 temp., and trop. Mts. 7 Brit. (brome-grass). Of little value as pasture.

Brongniartia H. B. et K. Leguminosae (III. 6). 30 trop. Am.

Brookea Benth. Scrophulariaceae (II. 4). 2 Borneo.

Brook-lime, *Veronica Beccabunga*; -weed, *Samolus Valerandi*.

Broom, *Cytisus* (*Sarothamnus*) *scoparius* Link.; -bush (W.I.), *Parthenium*; -corn, *Sorghum vulgare* Pers.; -butcher's-, *Ruscus aculeatus* L.; -rape, *Orobanche*; **Spanish-**, *Spartium junceum* L.; -root, *Epicampes*; -tree (W.I.), *Baccharis*; -weed (W.I.), *Corchorus*, *Scoparia*.

Brosimopsis Sp. Moore. Moraceae (II). 1 Matto Grosso.

Brosimum Sw. Moraceae (II). 10 trop. and S. temp. Am. Infl. remarkable, a spherical pseudo-head composed of one ♀ fl. and many ♂ fls. The former is sunk into the centre of the common recept. and its style projects at the top, whilst the latter occupy the whole of the outer surface. Each ♂ fl. has a rudim. P. and one sta., whose versatile anther in dehiscing passes from a shape somewhat like ⊥ to one like ⊥. Achene embedded in the fleshy recept.

The achene of *B. Alicastrum* Sw. is the bread-nut (not to be confused with *Artocarpus*, the bread-fruit), which is cooked and eaten in the W.I., &c. [The bread-nut of Barbados is, however, a seeded var. of the bread-fruit.] *B. Galactodendron* D. Don is the cow-tree or milk-tree of Venezuela. The milky latex flows in considerable quantities, tastes very like ordinary milk, and is used for the same purposes. The wood of several sp. is useful (snake-wood).

Brossardia Boiss. Cruciferae (2). 2 Persia.

Brotera Willd. (*Cardopatum* Juss.). Compos. (II). 4 Medit.

Broughtonia R. Br. (*Epidendrum* EP.). Orchid. (II. 6). 2 W. Ind.

Brousemichea Bal. Gramineae (8). 1 Tonquin.

Broussa tea, *Vaccinium Arctostaphylos* L.

Broussaisia Gaudich. Saxifragaceae (III). 2 Sandwich Is.

Broussonetia L'Hérit. Moraceae (I). 3 E. As., Polynes. Dioecious; ♂ fls. in pseudo-racemes with explosive sta. like *Urtica* (unus. in M.); ♀ fls. in pseudo-heads. Multiple fr. (cf. *Morus*, &c.). A good fibre, used for paper, &c., is obtained from the inner bark of *B. papyrifera* Vent. (paper-mulberry, Japan); in Polynes. the natives make tapa or kapa cloth from it. The l. double upwards during the heat of the day.

Browallia L. Solanaceae (5). 6 trop. Am.

Brown Peru bark, *Cinchona officinalis* L.

Brownea Jacq. (*Hermesia* Loeffl.). Leguminosae (II. 3). 10 trop. Am., W. Ind. The young shoots emerge very rapidly from the bud and hang downwards on flaccid stalks, the leaflets at first rolled up, and later spread out, and pink or red speckled with white. After a time they turn green and stiffen up and spread out normally. Cf. *Amherstia*. *B. grandiceps* Jacq. and others have fine bunches of fl.

Browneopsis Huber. Leguminosae (II. 3). 2 Brazil.

Brownleea Harv. ex Lindl. Orchid. (II. 1). 8 S. and trop. Afr.

Brownlowia Roxb. Tiliaceae. 6 Indomal.

Brucea J. S. Mill. Simarubaceae. 5 paleotrop. Very astringent. The seeds of *B. sumatrana* Roxb. &c. are remedies in dysentery.

Bruckenthalia Reichb. Ericaceae (IV. 1). 1 S.E. Eur.

Bruea Gaudich. Moraceae (inc. sed.). 1 E. Ind.

Brugmansia Blume. Rafflesiaceae. 3 Malay Arch.

Brugmansia Pers. = *Datura* L. p.p. (Solan.).

Bruguiera Lam. Rhizophoraceae. 6 palaeotrop. One of the mangroves (*q.v.*). Like *Rhizophora*, but without the aerial r. from higher branches. The r. in the mud give off erect aerating branches, as in *Sonneratia*.

Bruinsmea Boerlage et Koorders. Styraceae. 2 Java, Celebes.

Brumalis (Lat.), winter.

Brunella Tourn. ex L. (*Prunella*). Labiat. (VI). 5 ± cosmop. 1 Brit.

Brunellia Ruiz et Pav. Brunelliaceae. 10 Peru to Mexico.

Brunelliaceae (EP.; *Simarubaceae* p.p. BH.). Dicots. (Archichl. Rosales). Only genus *Brunellia*. Trees and shrubs; l. opp. or in whorls. Fl. monochlam., unisex., 4-5-7-merous, diplost. Cpls. 5-2, each with 2 pend. ov. Caps. Endosp.

Brunfelsia Plum. ex L. Solanaceae (5). 25 trop. Am. Several cult. The fl. change colour as they grow older (cf. *Ribes*, *Fumaria*). *Includes franciscana*

Brunia L. Bruniaceae. 5 S. Afr.

Bruniaceae (EP. BH.). Dicots. (Archichl. Rosales EP. BH.). 12 gen., 50 sp. S. Afr. Heath-like shrubs, with alt. exstip. l., and racemose infl. Fl. ♂ usu. reg., 5-merous, generally perig. Sta. in one whorl. Cpls. (3-2) each with 3 or 4 ov., or 1 with 1 ov. Caps. with 2, or nut with 1, seeds. Aril. Endosp. Chief genera: *Brunia*, *Berzelia*.

Brunneus (Lat.), brown.

Brunnichia Banks. Polygonaceae (III. 1). 3 N. Am., W. Afr.

- Brunonia** Sm. Brunoniaceae. 1 Austr, Tasm. Herb with rad. entire exstip. l. Blue fl. in heads, ♂. K (5), C (5), A 5, G 1-loc. 1-ovuled. Achene. Exalb.
- Brunoniaceae** (EP.; Goodeniaceae p.p. BH.). Dicots. (Sympet. Campanulatae). Only genus *Brunonia*, q.v.
- Brunsvigia** Heist. Amaryllidaceae (1). 10 Afr. Cult. orn. fl.
- Brush** (N.S. Wales, Queensland), forest; -box, *Tristania*.
- Brussels sprouts**, *Brassica oleracea* L. var.
- Bruxanelia** Dennst. Rubiaceae (inc. sed.). 1 E. Ind.
- Bruyere**, *Erica scoparia* L.
- Brya** P. Br. Leguminosae (III. 7). 5 Cent. Am., W. Ind. *B. Ebenus* DC. yields the wood Jamaica or American ebony, cocus or cocos wood, the heart wood turning black with age (cf. *Diospyros*).
- Bryanthus** S. G. Gmel. Ericaceae (1. 3). 1 E. Siberia.
- Brylkinia** F. Schmidt. Gramineae (10). 1 Japan, Saghalien.
- Bryo-** (Gr. pref.), moss.
- Bryocarpum** Hook. f. et Thoms Primulaceae. 1 Sikkim.
- Bryodes** Benth. Scrophulariaceae (II. 6). 1 Mauritius.
- Bryomorphe** Harv. Compositae (4). 1 Cape Colony.
- Bryonia** L. Cucurbitaceae (3). 10 Eur., As., Afr. *B. dioica* Jacq. (Brit., white bryony) marks the N. limit of the family in Eur. ♂ fl. larger. Honey secreted at the base of the P.
- Bryonopsis** Arn. Cucurbitaceae (3). 2 trop. Afr. and As.
- Bryony**, bastard (W.I.), *Cissus*; black-, *Tamus communis* L.; white-, *Bryonia dioica* Jacq.
- Bryophyllum** Salisb. Crassul. 4 trop. In the notches on the l. of *B. calycinum* Salisb. adv. buds develope, giving rise to new pl. In *B. proliferum* Bowie there are simple and cpd. l. on the same pl. K and C both gamophyllous. Cult. orn.
- Bryopsis** Reiche (*Lyallia*, *Reicheella* p.p.). Caryo. (1. 3). 1 Chili.
- Buaze fibre**, *Securidaca longipedunculata* Fres. (trop. Afr.).
- Bubon** L. = *Seseli* L. (Umbel.).
- Bucco** Wendl. = *Agathosma* Willd. (Rutac.).
- Bucephalandra** Schott. Araceae (v). 1 Borneo.
- Bucephalon** L. = *Trophis* P. Br. (Morac.).
- Buceragenia** Greenman. Acanthaceae* (IV. B). 1 Mexico.
- Buceras** Hall. ex All. = *Trigonella* L. p.p. (Legum.).
- Buchanania** Spreng. Anacard. (1). 20 trop. As. G 4—6, one fertile.
- Buchenavia** Eichl. (*Terminalia* p.p. BH.). Combret. 8 Brazil., W I.
- Buchenroedera** Eckl. et Zeyh. Leguminosae (III. 3). 15 S. Afr.
- Buchholzia** Engl. Capparidaceae (II). 3 trop. Afr.
- Buchingera** Boiss. et Hohen. Cruciferae (4). 1 Persia.
- Buchloe** Engelm. (*Bulbins* Rafin.). Gramineae (II). 1 (*B. dactyloides* Engelm.) the buffalo-grass of the western prairies of the U.S., a good fodder. It is a small creeping grass.
- Buchnera** L. Scrophulariaceae (III. 2). 60 trop. and subtrop.
- Buchnerodendron** Gürke. Flacourtiaceae (2). 6 trop. Afr.
- Bucholzia** Mart. = *Telanthera* R. Br. (BH.) = *Alternanthera* Forsk.
- Buchu**, *Baroma betulina* Bartl. et Wendl. f. and others.
- Bucida** L. (*Terminalia* p.p. BH.). Combret. 1 Cent. Am., W I.
- Buck-bean**, *Menyanthes trifoliata* L.; -eye (Am.), *Aesculus ohioensis*

Michx.; -s horn plantain, *Plantago Coronopus* L.; -thorn, *Rhamnus* (W.I.), *Rosa laevigata* Michx., sea -thorn, *Hippophaë rhamnoides* L.; -wheat, *Fagopyrum esculentum* Moench.

Buckinghamia F. Muell. Proteaceae (II). 1 Queensland.

Bucklandia R. Br. Hamamelidaceae. 1 Himal. to Java, *B. populnea* R. Br. The large stips. are folded against one another, enclosing and protecting the young axillary bud or infl. Fls. in heads in groups of 4, polyg. or monoec., sunk in the axis. The "calyx-tube" becomes visible as a ring after flowering. Wood valued.

Buckleya Torr. Santalaceae. 5 N. Am., China, Japan.

Bucquetia DC. Melastomaceae (I). 2 Colombia, Ecuador.

Bud, the much condensed undeveloped shoot end of the axis, composed of closely crowded young l. with very short internodes, well seen in Brussels sprouts, Cabbage, Lettuce, *Acer*, *Aesculus*, *Hippuris*, *Pinus*, *Syringa*, *Ulmus*; usu. axillary or terminal; **abortion**, *Syringa*; **accessory**, extra buds in an axil, which may be collateral (side by side), *Araceae*, *Crataegus*, *Muscari*, *Quercus*, or serial (one above another), *Aristolochia*, *Chrysophyllum*, *Colletia*, *Fraxinus*, *Fuchsia*, *Gleditschia*, *Goethea*, *Gymnocladus*, *Juglandaceae*, *Lonicera*, *Menispermaceae*, *Oleaceae*, *Rhamnaceae*, *Sambucus*, *Theophrasta*; **adventitious**, arising elsewhere than normally in an axil, *Begonia*, *Bryophyllum*, *Cardamine*, *Cystopteris*, *Linaria*, *Ophioglossum*, *Pteris*, *Pyrola*; **dormant**, branch buds which do not develop at once; **extra-axillary**, *Fagus*, *Monstera*, *Juglans*; **-scales**, the altered l. which protect the (usu. winter) bud, *Acer*, *Aesculus*, *Betula*, &c.; **sub-petiolar-**, *Cladrastis*, *Gleditschia*, *Platanus*, *Rhus*, *Robinia*, *Wormia*; **winter-**, *Acer*, *Aesculus*, *Betula*, *Hottonia*, *Hydrocharis*, *Juglandaceae*, *Myriophyllum*, *Quercus*, *Rhododendron*, *Sophora*, *Utricularia*, *Viburnum*. And cf. Aestivation, Flower bud, Vegetative Repr., Vernation, and next art. **-protection** against cold, heat, radiation, &c. is obtained in many ways; by stipules in *Artocarpus*, *Bucklandia*, *Cosmibuena*, *Cunonia*, *Dipterocarpus*, *Ficus*, *Magnoliaceae*; the young l. are pendulous in *Aesculus*, *Amherstia*, *Bauhinia*, *Brownea*, *Cinnamomum*, *Dryobalanops*, *Manilloa*, *Saraca*, *Theobroma*; the young l. red in *Cinnamomum*, *Dryobalanops*, *Haematoxylon*, *Mesua*, &c.; the buds sub-petiolar in *Cladrastis*, *Gleditschia*, *Platanus*, *Rhus*, *Robinia*, *Wormia*; other ways occur in *Iochroma*, *Manihot*, *Philadelphus*, *Pothos*, *Spathodea*, *Tabernaemontana*, &c.

Buda Adans. = *Spergularia* Presl (Caryoph.).

Buddleia Hout. Loganiaceae. 90 trop. and subtrop. Sometimes placed in Scrophul., but possesses stips (sometimes reduced to inter-petiolar lines).

Buena Pohl = *Cosmibuena* Ruiz et Pav. and *Cascarilla* Wedd.

Buergersiochloa Pilger. Gramineae (5). 1 New Guinea.

Buettneria Loeff. Sterculiaceae. 60 trop.

Buffalo-berry, *Shepherdia argentea* Nutt.; **-wood**, *Burchellia*.

Bufonia Sauv. ex L. (*Buffonia*). Caryophyllaceae (I. 1). 20 Medit., Eur. Not unlike *Juncus bufonius* in habit.

Buforrestia C. B. Clarke. Commelinaceae. 5 trop. W. Afr.

Bugbane, *Cimicifuga*.

- Bugle**, *Ajuga reptans* L.
Bugloss, *Lycopsis arvensis* L.; **viper's-**, *Echium vulgare* L.
Buglossum (Tourn.) Adans. = *Anchusa* L. p.p. (Borag.).
Bugula Tourn. ex Mill. = *Ajuga* L. p.p. (Labiata.).
Bulb, a modified stem, bearing a $\pm$ spherical mass of swollen l. closely folded over one another, *Allium*, *Galanthus*, *Liliaceae*, *Lilium*, *Oxalis*. Common in dry climates.
Bulbil, a little bulb, usu. in place of a fl. in the infl., *Agave*, *Allium*, *Cardamine*, *Gagea*, *Globba*, *Lilium*, *Lycopodium*, *Oxalis*, *Remusatia*, *Saxifraga*, *Scilla*, and cf. Vegetative Repr.
Bulbilis Rafin. = *Buchloe* Engelm. (Gram.).
Bulbine L. *Liliaceae* (III). 25 S. Afr., E. Austr.
Bulbinella Kunth. *Liliaceae* (III). 15 S. Afr., N.Z., &c.
Bulbinopsis Borzi. *Liliaceae* (III). 2 Austr.
Bulbocodium L. *Liliaceae* (I). 1 Eur.
Bulbophyllum Thou. *Orchidaceae* (II. 16). 350 trop., and S. temp. Epiph. with great reduction of l. The l. are often mere scales and assim. is performed by the tubers. In *B. minutissimum* F. Muell., &c., the tubers are hollow with stomata on inner surface (cf. l. of *Empetrum*). For the fl. see Darwin's *Orchids*, p. 137. Cult. orn. fl.
Bulbostylis DC. = *Brickellia* Ell. (Comp.).
Bulbostylis Kunth (*Fimbristylis* p.p.). *Cyper.* (I). 60 S. Am., Afr.
Bull apple tree (W.I.), *Sapota rugosa* Griseb.; **-hoof** (W.I.), *Passiflora Murucuja* L.; **-ock's heart**, *Anona reticulata* L.; **-pine**, *Pinus*; **-s horn thorn**, *Acacia sphaerocephala*.
Bullace, *Prunus insititia* L.
Bullate, puckered.
Bulleyia Schlechter. *Orchidaceae* (II. 3). 1 Yunnan.
Bulliaria DC. = *Tillaea* Michx. (*BH.*) = *Crassula* L. p.p.
Bully-tree (W.I.), *Dipholis*, *Myrsine*, *Sapota*, &c.
Bulnesia C. Gay. *Zygophyll.* 6 Argentina, Chili. Timber.
Bulrush, *Typha*, *Scirpus*; **-millet**, *Pennisetum typhoideum*.
Bumelia Sw. *Sapotaceae* (I). 30 Am.
Bunch-berry (Am.), *Cornus canadensis* L.
Bunchosia Rich. ex Juss. *Malpighiaceae* (II). 40 trop. Am., W.I.
Bungea C. A. Mey. *Scrophulariaceae* (III. 3). 3 As.
Bunias (Tourn.) L. *Cruciferae* (4). 5 Medit., As.
Bunioseris Jord. (*Lactuca* p.p.). *Compositae* (13). 2 France.
Buniotrinia Stapf. et Wettst. *Umbelliferae* (III. 5). 1 Persia.
Bunium L. (*Carum* L. p.p. *BH.*). *Umbell.* (III. 5). 30 N. palaeo-temp.
Bunophila Willd. = *Machaonia* Humb. et Bonpl. (Rub.).
Bunya-bunya pine, *Araucaria Bidwillii* Hook.
Buphane Herb. *Amaryllidaceae* (I). 3 S. and trop. Afr. Cult. orn. fl.
Buphthalmum L. *Compositae* (4). 4 Eur., As. minor. *B. salicifolium* L. is a char. pl. of the chalky Alps.
Bupleurum (Tourn.) L. *Umbelliferae* (III. 5). 100 Eur., As., Afr., N. Am. 4 Brit. (buplever or hare's ear). *B. rotundifolium* L. has perfoliate l., whence the name throw-wax (thorow-wax) by which it is known. All sp. have entire l., unusu. in this family.

Buplever, *Bupleurum*.

Buprestis Spreng. = *Bupleurum* Tourn. (Umbel.).

Bur or **burr**, a hooked fr.; **-bark** (W.I.), *Triumfetta*; **Bathurst** or **Noogoora**, *Xanthium*; **-dock**, *Arctium Lappa* L.; **-grass** (Am.), *Cenchrus*; **-marigold**, *Bidens*; **-reed** (Am.), *Sparganium*; **-weed**, *Medicago*, *Sparganium*.

Buracavia Baill. Euphorbiaceae (A. I. 1). 3 New Caled., Fiji.

Burasaia Thou. Menispermaceae. 4 Madag.

Buridgea Hook. f. Zingiberaceae (I). 1 Borneo. C-segments large, lat. stds. absent. The small labellum and petaloid sta. stand up in the centre of the fl.

Burchardia R. Br. (*Reya* O. Ktze.). Liliaceae (I). 1 Austr., Tasm.

Burchellia R. Br. Rubiaceae (I. 8). 1 Cape Col. Buffalo wood, very hard.

Burdachia Mart. Malpighiaceae (II). 2 N. Brazil.

Bureavella Pierre. Sapotaceae (II). 1 Indomal.

Burkea Benth. Leguminosae (II. 1). 2 W. and S. Afr.

Burlingtonia Lindl. = *Rodriguezia* Ruiz et Pav. (Orch.).

Burmanna L. Burmanniaceae. 40 trop. and subtrop.

Burmanniaceae (EP., BH.). Monocots. (Microspermae). 5 gen., 60 sp., trop. forest herbs, chiefly 'colourless' saprophytes. P (3+3), A 6 or 3, $\bar{G}$ (3), with parietal plac., or 3-loc. Caps. Seeds ∞ . Endosp. *Chief genera*: *Burmanna*, *Thismia*. (See *Nat. Pfl.*, and *Ann. of Bot.* 1895.)

Burmeistera Karst. et Triana. Campanulac. (III). 10 trop. S. Am.

Burnatastrum Briq. Labiatae (VII). 2 S. Afr., Madag.

Burnatia M. Mich. Alismaceae. 1 trop. Afr.

Burnet, *Poterium*; **-saxifrage**, *Pimpinella Saxifraga* L.

Burnettia Lindl. Orchidaceae (II. 2). 1 Tasmania.

Burning bush (Am.), *Euonymus atropurpureus* Jacq.

Burn-nose (W.I.), *Daphnopsis*.

Burragea Donn. Smith et Rose (*Gaura* p.p.). Onagr. (2). 2 Lower Calif.

Burrielia DC. Compositae (6). 1 Calif.

Bursa Weber in Wigg. = *Capsella* Medic. (Crucif.).

Bursaria Cav. Pittosporaceae. 1 Austr.

Bursera 'Jacq.' ex L. Burseraceae. 45 trop. Am. *B. gummiifera* L. (birch tree, gommier, turpentine tree) furnishes the balsam resin known as American elemi, chibou, cachibou, or gomart.

Burseraceae (EP., BH.). Dicots. (Archichl. Geraniales EP., BH.). 13 gen., 350 sp., trop. Shrubs and trees with alt., usu. cpd., dotted l. Balsams and resins occur, in lysigenous or schizogenous passages. Fls. small, generally unisex., with disc like Rutaceae, 5- or 4-merous, obdiplost. when both whorls of sta. are present. Cpls. (5-3), ov. usu. 2 in each. Ovary multiloc. with one style. Drupe or caps. Seed exalb. Many of the order are useful on account of their resins, &c. *Chief genera*: *Commiphora*, *Boswellia*, *Bursera*, *Canarium*.

Burtonia R. Br. Leguminosae (III. 2). 10 Austr.

Buseria Th. Dur. (*Leiochilus* EP.). Rubiaceae (II. 4). 1 Madag.

Bush (Austr.), scrub, cf. *Acacia*; **-clover**, *Lespedeza*.

Bush-wood, a forest in which the shrubs are so abundant as to keep the crowns of the trees from touching.

- Bushiola** Nieuwland (*Kochia* p.p.). Chenopod. (A). 1 N. Am.
- Bussea** Harms. Leguminosae (II. 7). 1 E. trop. Afr.
- Bustelma** Fourn. Asclepiadaceae (II. 1). 1 Brazil.
- Butayea** Wildem. (*Pseudoblepharis* EP.). Acanth. (IV. B). 1 Congo.
- Butcher's broom**, *Ruscus aculeatus* L.
- Butea** Koen. ex Roxb. Leguminosae (III. 10). 4 Ind, China. *B. frondosa* Roxb (dhak or palas tree, or bastard teak), one of the handsomest of fig. trees. A red juice flows from incisions in the bark; when dried it is known as Bengal kino and used as an astringent. The fls. yield a fugitive orange-red dye. The tree also yields lac (see *Ficus*), and is very important for lac cult.
- Butomaceae** (EP.; *Alismaceae* p.p. BH.). Monocots. (Helobieae). 4 gen., 5 sp., trop. and temp. Water and marsh herbs with l. of various types. Infl. usu. a cymose umbel. Flr. ♀, reg., 2- or 3 merous, hypog. P 6, in two whorls, the outer sepaloid, the inner petaloid (exc. Butomus). Sta. 9-∞, with introrse anthers. Cpls. 6-∞, apocp., with ∞ anatr. ov. scattered over their inner walls (cf. Nymphaea), except on midrib and edges. Follicles; seed ex-alb.; embryo straight or horse-shoe shaped. *Chief genera*: Butomus, Hydrocleis.
- Butomopsis** Kunth (*Tenagocharis* EP.). Butomaceae. 1 Austr.
- Butomus** L. Butom. 1 temp. As., Eur. (incl. Brit.), *B. umbellatus* L. (flowering rush). Infl. a term. fl. surrounded by 3 bostryx-cymes.
- Butonica** Lam. = Barringtonia Forst. p.p. (Lecyth.).
- Butter**, cf. oils; -**bean**, *Phaseolus vulgaris* L.; -**bur**, *Petasites officinalis* Moench.; -**and eggs** (Am.), *Linaria*; -**cup**, *Ranunculus*; -**nut**, *Caryocar*, (Am.) *Juglans*; **shea**-, *Butyrospermum*; -**tree**, *Pentadesma*, *Bassia*; -**wort**, *Pinguicula*.
- Butterfly flowers** (class F), *Cuphea*, *Daphne*, *Eupatorium*, *Gentiana*, *Lonicera*, *Lychnis*, *Onagraceae*, *Rubiaceae*, &c.; -**orchis**, *Habenaria*, *Oncidium*.
- Button-bush** (Am.), *Cephalanthus*; -**tree**, (W.I.), *Conocarpus*; -**weed** (W.I.), *Spermacoce*, *Borreria*; -**wood**, *Platanus occidentalis*.
- Buttonia** MacKen. Scrophulariaceae (III. 2). 2 S. and trop. Afr.
- Butua** Eichl. = Abuta Aubl. p.p. (Menisperm.).
- Butyrospermum** Kotschy. Sapotaceae (I). 2 trop. Afr. The oily seeds of *B. Parkii* Kotschy when pressed yield shea butter.
- Buxaceae** (EP.; *Euphorbiaceae* p.p. BH.). Dicots. (Archichl. Sapindales). 6 gen., 30 sp. temp. and trop. Evergreen shrubs with exstip. leathery l., and no latex. Fls. in heads or spikes, unisex., reg., apet. or naked. Sta. 4-∞. G usu. (3), 3-loc., with 3 styles which are persistent on the fr. Ov. 2-1 in each loc., pend., anat., with dorsal raphe. Loculic. caps., or drupe. Seed with caruncle or none. Endosp. *Chief genera*: Buxus, Pachysandra.
- Buxanthus** Van Tieghem (*Buxus* p.p.). Buxaceae. 2 trop. Afr.
- Buxella** Van Tieghem (*Buxus* p.p.). Buxaceae. 2 S. Afr., Madag.
- Buxus** L. Buxaceae. 20 palaeotemp. W.I. *B. Sempervirens* L. (box) often cult. Fls. in heads, a term. ♀ flr. surrounded by a number of ♂ fls. The fr. dehisces explosively the inner layer of the pericarp separating from the outer and shooting out the seeds by folding into

- a U-shape (*cf.* *Viola*). The wood of the box is exceedingly firm and close-grained, and is largely used in turning, wood-engraving, &c.
- Byblis** Salisb. Lentibulariaceae (usually in Droseraceae, but *cf.* Lang in *Flora* 88, p. 179). 2 Austr. Insectivorous undershrubs, with stalked and sessile glands like *Pinguicula*.
- Byronia** Endl. (*Ilex* p.p.). Aquifol. 3 Austr., Polynesia.
- Byrsa** Nor. Inc. sed. Nomen.
- Byrsanthus** Guillem. Flacourt. (9) (Samyd. *BH.*). 2 W. Afr.
- Byrsocarpus** Schumach. et Thonn. Connar. 5 trop. Afr., Madag.
- Byronima** Rich. ex Juss. Malpighiaceae (II). 120 Cent. and S. Am., W. Ind. Fr. a drupe, ed. The bark of some sp. is used in tanning.
- Byrsophyllum** Hook. f. Rubiaceae (I. 8). 2 India, Ceylon.
- Bystropogon** L'Hérit. Labiatae (VI). 20 Andes, Canary Is.
- Bythophyton** Hook. f. Scrophulariaceae (II. 6). 1 Indomal.
- Caatinga forests** (Brazil), forests in which the l. fall in dry season.
- Cabbage**, *Brassica oleracea* L.; **-bark tree** (W.I.), *Andira inermis* H. B. et K.; **Kerguelen-**, *Pringlea antiscorbutica* R. Br.; **-palm**, *Oreodoxa oleracea* Mart., *Euterpe*, *Sabal*, &c.; **-rose**, *Rosa centifolia* L.; **skunk-**, *Symplocarpus foetidus* Nutt.; **-tree**, *Sabal* (W.I.), *Oreodoxa*, *Andira*.
- Cabomba** Aubl. Nymphaeaceae (II). 4 warm Am. Water pl. with peltate floating l. and much-divided submerged l. (*cf.* *Ranunculus*, *Trapa*). Fl. 3-merous (P 3 + 3, A 3—6, G. usu. 3) and fully apocp. (thus forming a link to the other Ranales, with which the gynaeceum of most N. does not agree). Closed follicles. No aril; endo- and peri-sperm. Ovules sometimes attached to the cpl. *midrib*.
- Cabralea** A. Juss. Meliaceae (III). 35 trop. Am.
- Cacabus** Bernh. Solanaceae (2). 4 W. trop. S. Am.
- Cacalia** L. (*Senecio* p.p. *Bil.*). Compositae (8). 40 N.E. As., Am.
- Cacaliopsis** A. Gray. Compositae (8). 1 Pac. U.S.
- Cacao**, *Theobroma*; **do.** Tourn. ex Mill. = *Theobroma* L.
- Cacara** Thou. = *Pachyrhizus* Rich. p.p. (Legum.).
- Caccinia** Savi. Boraginaceae (IV. 1). 7 W. and Cent. As.
- Cachibou**, *Bursera gummifera* L.
- Cachrys** L. Umbelliferae (III. 4). 8 Medit., W. and Cent. As.
- Cacoon** (W.I.), *Entada scandens* Benth.
- Cacosmia** H. B. et K. Compositae (6). 1 Peru.
- Cacoucia** Aubl. (*Combretum* p.p. *EP.*). Combret. 5 W. trop. Afr.
- Cactaceae** (*EP.*, *BH.*). Dicots. (Archichl. Opuntiales; Ficoidales *BH.*). 25 gen., 1500 sp., chiefly localised in the dry regions of trop. Am., but spreading to a distance N. and S. (*Opuntia missouriensis* as far as 59° N.), and far up the mountains (to 12,000 ft. and even higher). Even in the damp forest regions some sp. appear as epiphytes. The only representative of the order in the Old World is *Rhipsalis*, found in Afr., Mauritius, &c., but several sp. of *Opuntia*, &c. are now nat. in S. Afr., Austr., &c. and becoming troublesome.
- Xero. of the most pronounced type, exhibiting reduction of the transpiring surface, and also storage of water, often in great quantity. The veg. organs show great var. of type; the classification is perhaps better based upon them than upon the repr. organs. R. generally long and well-developed (in cultivation liable to decay). Stem

fleshy, of various shapes, rarely bearing green l., and usu. provided with sharp barbed thorns, which give protection against animals. We may consider briefly some of the more important types of shoot found in C. (refer to genera for further details). The nearest approach to the ordinary plant-type is perhaps *Pereskia*, which has large green l., somewhat fleshy, in whose axils are groups of thorns mixed with hairs; the space occupied by these is termed the *areole*. About the morphology of the spines there has been much dispute; most authors regard them as repres. the l. of the axillary shoot, whose stem is undeveloped, but there is also good evidence in favour of the view that they are "emergences." In some gen. they are provided with barbs. The next stage is found in *Opuntia*, where the stem has taken over the water-storing and assim. functions, but still bears l.; in some sp. these aid the stem functions throughout life, but in most they fall off very early, and the stem is usually flattened to expose more surface to air and light. Then we come to *Leuchtenbergia*, which has an aloe-like habit with the areoles on the tips of the apparent l.; the fl. arises either in the axil of the "leaf" or on the areole. Development shows that the apparent l. is really a cpd. structure. The bud stands, not exactly in the axil, but on the base of the l., and the two grow out together to form a *leaf-cushion* or *mammilla*, at the outer end of which is the growing point and the rest of the l. itself; the latter is represented by a small scale (often microscopic) and the former gives rise to the thorns, &c. on the areole. The same phenomenon is seen in *Mammillaria*, *Cereus* sp., &c. In some cases the growing point divides, during the growth of the mammilla, into two, one on the tip, the other in the axil, of the cushion. The latter gives rise to the fl. In *Cereus*, *Echinocactus*, &c. the stem is $\pm$ cylindrical, bearing ribs on which are the areoles at regular intervals; the rib is formed by the "fusion" of mammillae, *i.e.* by the growth of the tissue under them during their development (*cf.* formation of sympetalous corolla). In *Phyllocactus*, *Epiphyllum*, and sp. of *Rhipsalis* some or all of the shoots exhibit a flattened leafy form with areoles in notches on their edges. This form appears to be derived from the preceding by abortion of some of the ridges, and reversions are often seen (they appear if access of light be prevented). Lastly, other sp. of *Rhipsalis* show perfectly cylindrical stems.

The bulk of the internal tissue consists of parenchyma in which water is stored; the cell-sap is commonly mucilaginous, thus further obstructing evaporation. The cuticle is thick, and the ridges of the stem are usu. occupied by mechanical tissue, whilst the stomata are in the furrows. Everything thus goes to check transpiration to the utmost extent; it is very difficult to dry a cactus for the herbarium, and its vitality is very great. Its growth is slow, but sp. of *Cereus*, &c. reach a great size. Veg. repr. is frequent in the mammillate forms, and occurs to some extent in others. In garden practice, cacti are often multiplied by cuttings, for a piece cut off and stuck into the soil will usually grow. Grafting is also largely resorted to.

Fls. usu. solitary (exc. *Pereskia*), borne upon or near the areoles or in the axils of mammillae, large, brightly coloured, $\frac{5}{8}$, reg. or $\frac{1}{1}$. P (∞), showing gradual transition from sepaloïd to petaloïd l., spirally

arranged, often up the side of the ovary (cf. *Nymphaea*). Sta. ∞ , epipet. $\bar{G}$ ($4-\infty$), uniloc. with parietal plac. and ∞ anatrop. ov.; style simple. Berry, the flesh derived from the funicles. Endosp. or none.

The fr. of many sp. is edible (e.g. *Opuntia*, &c.). Several are used in making hedges. Cochineal is cultivated on *Nopalea*, *Opuntia*, &c.

Classification and chief genera (after K. Schumann):

- I. *PERESKIOIDEAE* (habit of ordinary pl., with flat l. and panicles; no barbed thorns): *Pereskia* (only genus).
- II. *OPUNTIOIDEAE* (succulents with round or flat leaf-like joints; l. cylindrical, usu. falling very early; barbed thorns; fl. rotate): *Opuntia*, *Nopalea* (only genera).
- III. *CEREIOIDEAE* (succulents; l. reduced to scales, often very minute; no barbed thorns):
 1. *Echinocactaceae* (fl. funnel- or salver-shaped, in or near the areole): *Cereus*, *Phyllocactus*, *Epiphyllum*, *Echinocactus*, *Melocactus*, *Leuchtenbergia*.
 2. *Mammillariaceae* (do., but in axil of mamilla): *Mammillaria*, *Pelecypora*.
 3. *Rhipsalideae* (fl. rotate): *Rhipsalis*.

For further details refer to genera. Also Goebel, *Pflanzenb. Sch.* and in *Flora* 1895, Ganong in *Flora* 1894, *Bot. Gaz.* 1895, *Ann. Bot.* 1898, Schumann in *Nat. Pfl.* and *Gesamtbeschreibung der Kakteen*, 1897-99, and Vöchting in *Pringsh. Jahrb.* 1894. Cf. also *Euphorbia* and *Stapelia*.

Cacteae (BH.) = Cactaceae.

Cactiflorae (Warming), the 7th order of Choripetalae.

Cactus L. = Cactaceae, esp. *Mammillaria*.

Cactus, night-flowering, *Cereus*; **old man-**, *Cereus senilis*.

Cadaba Forsk. Capparidaceae (II). 20 palaeotrop. Disc prolonged post. into a tube; both androphore and gynophore present.

Cadalvena Fenzl. Zingiberaceae (II). 1 trop. Afr.

Cadellia F. Muell. Simarubaceae. 2 sub trop. Austr.

Cadetia Gaudich. = *Dendrobium* Sw. (Orchid).

Cadia Forsk. Leguminosae (III. 1). 5 E. Afr., Madag., Arabia. Fl. almost reg. with free sta.

Cadiscus E. Mey. Compositae (6). 1 S.W. Cape Colony.

Cadjans. *Cocos*, *Nipa*, &c.

Caducous, dropping early.

Caecum, a prolongation of the embryo-sac, *Casuarina*, &c.

Caelestina Cass. = *Ageratum* L. (Compos.).

Caeruleus (Lat.), pale sky blue.

Caesalpinia L. Leguminosae (II. 7). 60 trop. and sub trop., often hook climbers. The pods of *C. bonducella* Fleming (nickar bean) are brought to Eur. by the Gulf Stream. Those of *C. coriaria* Willd. (divi-divi) are imported from Venezuela and W.I. for tanning. *C. sappan* L. (Indomal., cult.) and several Brazilian sp. yield a red dye from the wood (sappan, Brazil, or peach wood). *C. pulcherrima* Sw. (peacock fl., Barbados pride) is cult. orn. fl.

Caesarea Cambess. = *Viviania* Cav. p.p. (Geran.).

Caesia R. Br. Liliaceae (III). 10 Austr., S. Afr.

Caesius (Lat.), lavender-coloured, or pale green and grey.

Caespitose, in tufts.

Caesulia Roxb. Compositae (4). 1 N.E. India.

Caffein, *Coffea*, *Cola*, *Ilex*.

Cafta, *Catha edulis* Forsk.

Caioophora Presl (*Blumenbachia* p.p. *BH.*). Loasaceae. 50 S. Am.

Cajanus DC. Legum. (III. 10). 1 trop. Afr., As., *C. indicus* Spreng. (dhal, pigeon pea, or Congo pea) cult. in India, &c. for its ed. seeds.

Cajeput oil, *Melaleuca Leucadendron* L.

Cakile L. Cruciferae (2). 4 *. *C. maritima* Scop. (sea-rocket, Brit.) has fleshy leaves, and long tap root.

Calabar bean, *Physostigma venenosum* Balf.

Calabash, *Crescentia*; -**cucumber**, *Lagenaria*; -**nutmeg** (W. Afr.), *Monodora grandiflora* Benth., (W.I.) *M. myristica* Dun.; **sweet-**, *Passiflora maliformis* L.

Calacanthus T. Anders. Acanthaceae (IV. A). 1 Indomal.

Caladenia R. Br. Orchidaceae (II. 2). 35 Austr., N.Z. Labellum in some irritable (*cf.* *Pterostylis*; Darwin, *Orchids*, p. 90).

Caladiopsis Engl. Araceae (VI). 1 Colombia.

Caladium Vent. Araceae (VI). 15 trop. S. Am. Cult. orn. l. (∞ vars.).

Calais DC. = *Microseris* D. Don, p p. (Compos.).

Calalu (W.I.), *Phytolacca*.

Calamagrostis Adans. (incl. *Deyeuxia* Beauv. *EP.*). Gramineae (8). 200 temp., 3 Brit.

Calamander, *Diospyros quaesita* Thw.

Calamiferous, with hollow stem.

Calamint, *Calamintha*.

Calamintha (Tourn.) Lam. (*Satureia* p.p. *EP.*). Labiatae (VI). 60 N. temp., trop. Mts.; 3 Brit. (basil, calamint). Often gynodioec.

Calamochloa Fourn. Gramineae (10). 1 Mexico.

Calamovilfa Hack. (*Ammophila* p.p. *BH.*). Gramineae (8). 2 N. Am.

Calamus L. Palmae (III). 280 palaeotrop., mostly leaf-climbers with thin reedy stems. In some there are hooks on the back of the midrib, but the more common type of l. is one in which the pinnae at the outer end are repres. by stout spines pointing backwards (*cf.* *Desmoncus*). The l. shoots almost vertically out of the bud up among the surrounding veg., and the hooks take hold. The stem often grows to immense lengths (500—600 ft.); the plants are troublesome in trop. forests because the hooks catch. The stripped stems (rattan canes *q.v.*), are largely used for making chair bottoms, baskets, cables, &c.

Calanda K. Schum. Rubiaceae (II. 1). 3 Afr., Austr.

Calandrinia H. B. et K. Portulacaceae. 80 sp. Vancouver to Chili, Austr. The fls. close very quickly in absence of sunlight.

Calandrinopsis Franz. (*Calandrinia* p.p.). Portul. 4 Chili.

Calanthe R. Br. Orchidaceae (II. 9). 80 trop. 8 pollinia, which, if re-introduced, strike the sides of rostellum and diverge into stigmas.

Calanthidium Pfitz. Orchidaceae (II. 9). 1 Burma.

Calantica Jaub. ex Tul. Flac. (9) (Samyd. *BH.*) 5 Madag., E. Afr.

Calathea G. F. W. Mey. Marantaceae. 90 trop. Am., and W. Afr.

- Std. β (see fam.) present in most. The tubers of *C. Allouia* Lindl. (topee tampo) are eaten like potatoes in the W.I.
- Calathodes** Hook. f. et Thoms. (*Trollius* p.p. *EP.*). Ranunc. (2).
1 Himal.
- Calathostelma** Fourn. Asclepiadaceae (II. 1). 1 Brazil.
- Calcaratus** (Lat.), spurred.
- Calceolaria** L. Scrophulariaceae (II. 1). 200 S. Am., Mexico, N. Z.
Many forms and hybrids cult. orn. fl.
- Calceolate**, slipper-shaped.
- Calcicolous**, living on chalk, **-philous**, chalk-loving.
- Calcitrapa** Hall. = *Centaurea* L. p.p. (Comp.).
- Caldasia** Lag. = *Oreomyrrhis* Endl. (Umbell.).
- Caldcluvia** D. Don. Cunoniaceae. 1 Chili.
- Caldesia** Parl. (*Alisma* L. *BH.*). Alismaceae. 3 palaeotrop.
- Calea** L. Compositae (5). 80 Am., esp. campos.
- Caleana** R. Br. Orchidaceae (II. 2). 4 temp. Austr.
- Calectasia** R. Br. Liliaceae (III). 1 S. and W. Austr.
- Calendula** L. Compositae (9). 15 Medit., *C. officinalis* L. (marigold) cult. A "hen-and-chickens" var. occurs, in which each principal head is surrounded by others, springing from the axils of the invol. br. Disc florets δ , ray florets η . Three kinds of fr. occur.
- Caleopsis** Fedde (*Goldmania* Greenman). Compos. (5). 1 Mex.
- Calepina** Adans. Cruciferae (2). 1 Eur., Medit.
- Calesiam** Adans. (*Lannea* A. Rich.; *Odina* *BH.*). Anacard. (2).
15 trop. Afr. and As.
- Caletia** Baill. = *Micrantheum* Desf. (Euphorb.).
- Calibanus** Rose (*Dasyllirion* p.p.). Liliaceae (VI). 1 Mex., a xero. with remarkable tuber and a few grass-like l.
- Calibrachoa** Cerv. Solanaceae (Inc. sed.). 1 Mex.
- Calico bush** (Am.), *Kalmia latifolia* L.
- Calicorema** Hook. f. (*Sericocoma* Fenzl.). Amarant. (2). 1 S. Afr.
- California bluebell**, *Nemophila*; **-hyacinth**, *Brodiaea*; **-lilac**, *Ceanothus*; **-nutmeg**, *Torreya*; **-poppy**, *Eschscholtzia*, *Platystemon*; **-redwood**, *Sequoia*.
- Calimeris** Nees = *Aster* Tourn. p.p. (Compos.).
- Caliphruria** Herb. Amaryllidaceae (1). 4 S. Am. Sta. with stipular appendages (see fam.). Cult. orn. fl.
- Calisaya bark**, *Cinchona Calisaya* Wedd.
- Calla** L. Araceae (III). 1 N. temp. and sub-arct., *C. palustris* L. Fls. η with P, borne once in two years. Aquatic. *C. aethiopica* L. = *Richardia*.
- Callaeolepis** Karst. (*Fimbristemma* *BH.*). Asclep. (II. 4). 1 C. Am.
- Callaeum** Small (*Jubelina* p.p.). Malpigh. (1). 1 Nicaragua.
- Calli-** (Gr. pref.), beautiful.
- Calliandra** Benth. Leguminosae (I. 1). 100 warm Am., As. Cult. orn. flg. shrubs.
- Callianthemum** C. A. Mey. Ranunculaceae (2). 5 Mts. of Eur. and Cent. As. See *Bot. Mag.* t. 7603, 1898.
- Calliature wood**, *Pterocarpus santalinus* L. f.
- Callicarpa** L. Verbenaceae (4). 40 trop. and subtrop.
- Callichilia** Stapf. (*Tabernaemontana* p.p.). Apocyn. (1. 3). 6 trop. Afr.

- Callichlamys** Miq. Bignoniaceae (1). 4 warm S. Am.
- Callichroa** Fisch. et Mey. = *Layia* Hook. et Arn. p.p. (Comp.).
- Callicoma** Andr. Cunoniaceae. 2 E. Austr.
- Calligonum** L. Polygonaceae (II. 1). 20 N. Afr., W. As., S. Eur.
- Callilepis** DC. Compositae (4). 3 S. Afr.
- Callionia** Greene (*Potentilla* p.p.). Rosaceae (III. 2). 1 N. Am.
- Calliopsis** Reichb. = *Coreopsis* L. p.p. (Compos.).
- Callipeltis** Stev. Rubiaceae (II. 11). 3 Egypt to Persia.
- Calliprora** Lindl. = *Brodiaea* Sm. p.p. (Lili.).
- Callipsyche** Herb. (*Eucrosia* Ker-Gawl. EP.). Amaryllidaceae (1).
3 Ecuador, Peru. Cult. orn. fl.
- Callirhoe** Nutt. (*Malva* p.p. EP.). Malvaceae (II). 8 N. Am.
- Callisia** L. in Loefl. Commelinaceae. 4 trop. Am.
- Callista** D. Don = *Erica* Tourn. p.p. (Eric.).
- Callistachys** Vent. (*Oxylobium* Andr. BH.). Legum. (III. 2). 27 Austr.
- Callistemma** Boiss. (*Scabiosa* p.p. BH.). Dipsaceae. 1 E. Medit.
- Callistemon** R. Br. Myrtaceae (II. 1). 12 Austr., often cult. (bottle-brushes). The axis of the infl. grows on beyond the fl. and continues to produce l. (cf. *Eucomis*). Sta. conspicuous, as is often the case in the dry climate of Austr. (cf. *Acacia*). Cult. orn. flg. shrubs.
- Callistephus** Cass. Compositae (3). 1 Chi., Jap., *C. hortensis* Cass., cult. under the name China aster. *Bot. Mag.*, 1898, t. 7616.
- Callisteris** Greene (*Gilia*, *Cantua*, &c. p.p.) Polem. 10 N. Am.
- Callisthene** Mart. Vochysiaceae. 10 S. Am.
- Callithamna** Herb. = *Stenomesson* Herb. p.p. (Amaryll.).
- Callitrichaceae** (EP.; *Haloragidaceae* p.p. BH.). Dicots. (Archichl. Geraniales). Only genus *Callitriche* (q.v.). As usu. in water plants (cf. *Ceratophyllaceae*), the systematic position is doubtful. B.-H. unite C. with *Haloragidaceae*, but the differences are considerable. They have also been placed near *Caryophyllaceae*, *Verbenaceae*, *Boraginaceae*, &c., but seem on the whole nearest to *Euphorbiaceae*, where they are placed by Engler and by Warming (*Tricoccae*).
- Callitriche** L. Callitrichaceae. 25 (perhaps only vars. of 1 or 2), cosmop. (exc. S. Afr.). Several forms (water star-wort) in Brit. The submerged l. are longer and narrower than the floating, and the more so the deeper they are below the surface. Land forms also occur. Fl. unisex., naked, commonly with 2 horn-like bracteoles, protog.; ♂ of 1 sta.; ♀ of (2) cpls., transv. placed, 4-loc. by 'false' septum (cf. *Labiatae*), with 2 styles; 1 ov. in each loc., pend. anatr. with ventral raphe. Schizocarp. Fleshy endosp.
- Callitris** Vent. (excl. *Tetraclinis* Mast., *Widdringtonia* Endl.). Coniferae (Pinac.; see C. for gen. char.). 18 Austr. (cypress pine). L. and cone-scales in whorls. The cone ripens in 1 or 2 years. Wood valuable. Yield a sandarach resin.
- Callixene** Comm. ex Juss. = *Luzuriaga* Ruiz et Pav. (Lili.).
- Callopsis** Engl. Araceae (1). 1 Usambara.
- Callostylis** Blume. Orchidaceae (II a, III). 1 Java.
- Calluna** Salisb. Ericaceae (IV. 1). 1, *C. vulgaris* Salisb. (heather or ling), Eur., Greenland, and from Newfoundland to Massachusetts (the only repres. of *Ericoideae* in Am.), covering large areas, together with sp. of *Erica* and *Vaccinium*. A low evergr. shrub, with linear

closely crowded wiry l. and racemes of fls. K coloured like the almost polypetalous C. The honey is more easily accessible than in *Erica* (fl. of class B) and there is a larger circle of visiting insects, including however many bees (heather honey is among the best). The stigma projects beyond the mouth of the fl.; insects touch it first and in probing for honey jostle the anthers. The fl. is also wind pollinated; the loose powdery pollen blows about easily and the stigma is not covered by the C.

Callus, new tissue covering a wound, usu. $\pm$ corky.

Callyntranthele Ndz. Malpighiaceae (11). 1 Venezuela.

Calocephalus R. Br. Compositae (4). 12 temp. Austr.

Calochilus R. Br. Orchidaceae (11. 2). 4 E. Austr., New Caled., N.Z.

Calochortus Pursh. Liliaceae (v). 40 W. N. Am.

Calocrater K. Schum. Apocynaceae (11. 1). 1 Cameroons.

Calodendrum Thunb. Rutaceae (1). 2 S. and trop. Afr.

Calogyne R. Br. Goodeniaceae. 3 China, Austr.

Calolisianthus Gilg. Gentianaceae (1). 7 Brazil to W.I.

Caloncoba Gilg (*Oncoba* p.p.). Flacourt. (2). 14 trop. Afr.

Calonyction Choisy (*Ipomoea* L. p.p. *BH.*). Convolvulaceae (1). 5 trop. Am. Cult. orn. fl.

Calophaca Fisch. Leguminosae (111. 6). 10 S. Russia to Burma.

Calophanes Don (*Dyschoriste* *EP.*). Acanth. (IV. A). 40 trop.

Calophyllum L. Guttiferae (1v). 60 trop. chiefly Old World. *C. tacamahaca* Willd. and other sp. yield resins known as Tacamahac. (See *Populus*.) The young l. are usu. prettily coloured.

Calophysa DC. (*Maieta* Aubl. *EP.*). Melastom. (1). 10 trop. Am.

Calopogon R. Br. Orchidaceae (11. 7). 5 U.S.

Calopogonium Desv. Leguminosae (111. 10). 5 C. and S. Am., W.I.

Calopsis Beauv. ex Juss. = *Leptocarpus* R. Br. (Rest.).

Calopyxis Tul. (*Combretum* p.p. *BH.*). Combret. 10 Madag.

Calorchis Barb. Rodr. (*Ponthieva* R. Br.). Orch. (11. 2). 1 Brazil.

Calorhabdos Benth. Scrophulariaceae (111. 1). 4 E. As.

Calorophus Labill. = *Hypolaena* R. Br. (Rest.).

Calosacme Wall. = *Chirita* Buch.-Ham. = *Didymocarpus* Wall. p.p.

Calosanthus Blume = *Oroxylum* Vent. (Bignon.).

Caloscilla Jord. et Fourr. = *Scilla* L. p.p. (Lili.).

Calostemma R. Br. Amaryllidaceae (1). 3 sp. E. Austr. There is no embryo, but bulbils are said to be formed in the embryo sac.

Calostephane Benth. Compositae (4). 3 E. warm Afr.

Calostigma Decne. Asclepiadaceae (11. 1). 8 Brazil.

Calothamnus Labill. Myrtaceae (11. 1). 25 W. Austr. The axis goes on bearing l. beyond the fls. (*cf.* *Callistemon*). Sta. in bundles before the petals, the common axis of the bundle very large.

Calotheca Desv. = *Briza* L.; *do.* Spreng. = *Aeluropus* Trin.

Calotis R. Br. Compositae (3). 20 Austr.

Calotropis R. Br. Asclepiadaceae (11. 1). 3 trop. As., Afr. *C. gigantea* Ait. (madar, mudar, wara) yields a fibre from the bark, and a floss, used like kapok (*Eriodendron*), from the seeds.

Calpidia Thou. (*Pisonia* p.p. *EP.*). Nyctagin. 20 Malaya, New Cal.

- Calpigyne** Blume. Euphorb. (A. II. 2). 1 Celebes, Borneo.
- Calpocalyx** Harms. Leg. uminosae (I. 4). 3 W. trop. Afr.
- Calpurnia** E. Mey. Leguminosae (III. 1). 10 Afr.
- Caltha** (Rupp.) L. Ranunculaceae (2). 20 temp. *C. palustris* L. in Brit. (marsh-marigold, king-cup). Honey is secreted by the cpls., and the fls. have no "honey-leaves," the K being coloured.
- Caltrops**, *Tribulus*.
- Calumba root**, *Jateorhiza Columba* Miers; false- (Ceylon), *Coscinium fenestratum* Colebr.
- Calvaria** Comm. Sapotaceae. 3 Madag.
- Calvoa** Hook. f. Melastomaceae (1). 8 trop. Afr.
- Calyce-** (Gr. pref.), cup; **-anthemy**, a monstrosity of the K imitating a C; **-iflorae** (BH.), the 3rd series of Polypetalae; **-ine**, belonging to K; **-oid**, like a K; **-ulus**, *Loranthaceae*, *Tofieldia*.
- Calycacanthus** K. Schum. Acanthaceae (IV. B). 1 New Guinea.
- Calycadenia** DC. = *Hemizonia* DC. p.p. (Compos.).
- Calycanthaceae** (EP., BH.). Dicots. (Archichl. Ranales EP., BH.). Only genus *Calycanthus*, q.v.
- Calycanthus** L. (incl. *Chimonanthus* Lindl.). Calycanthaceae. 3 N. Am., China, Japan. *C. floridus* L. (Carolina allspice) cult. orn. shrub. Snrubs, usu. aromatic, with opp., simple l. and term. acyclic fls. on short shoots. P ∞ , perig., spiral, showing gradual transition from sepaloid to petaloid l. Sta. 5—30. Cpls. ∞ , in hollowed axis; 2 anatr. ov. in each. Achenes enclosed in axis. Embryo large with spirally wound cotyledons, in slight endosp.
- Calycera** Cav. Calyceraceae. 10 S. Am.
- Calyceraceae** (EP., BH.). Dicotyledons (Sympet. Campanulatae; Asterales BH.). 3 gen., 25 sp., S. Am. Close to Compositae. Herbs with alt. exstip. l. Fls. in heads with invol. of bracts, $\varnothing$ or σ $\varnothing$, epig., 4—6-merous C leafy. Filaments of sta. united, anthers free or slightly coherent at base. Ov. 1-loc.; ovule 1, pend., anatr.; stigma capitate. Embryo straight in slight endosp. *Genera*: Boopis, Calycera, Acicarpha.
- Calyciflorae** (BH.). The 3rd series of Polypetalae.
- Calycinae** (BH.). The 4th series of Monocotyledons.
- Calycobolus** Willd. = *Breweria* R. Br. (BH.) = *Prevostia* Choisy.
- Calycocarpum** Nutt. Menispermaceae. 1 Atl. N. Am.
- Calycogonium** DC. Melastomaceae (1). 24 W. Ind.
- Calycolpus** Berg. Myrtaceae (I. 1). 10 W. Ind., S. Am.
- Calycopeplus** Planch. Euphorbiaceae (A. II. 8). 3 Austr.
- Calycophyllum** DC. Rubiaceae (I. 5). 3 W.I., S. Am.
- Calycophysum** Karst. et Triana. Cucurbitaceae (3). 2 Colombia.
- Calycopteris** Lam. Combretaceae. 1 India.
- Calycorectes** Berg. Myrtaceae (I. 1). 12 S. Am.
- Calycoseris** A. Gray. Compositae (13). 2 Calif. to Mexico.
- Calycosia** A. Gray (*Psychotria* p.p. EP.). Rubi. (II. 5). 5 Polyn.
- Calycothrix** Meissn. (*Calythrix*). Myrt. (II. 2). 40 Austr. Cult. orn.
- Calycotome** Link. Leguminosae (III. 5). 4 Medit.
- Calycotropis** Turcz. Caryophyllaceae (inc. sed.). 1 Mex.
- Calyctenium** Greene (*Rubus* p.p.). Rosac. (III. 2). 1 Japan.

- Calydermos** Lag. = *Calea* L. p.p. (Compos.).
- Calydorea** Herb. Iridaceae (11). 6 Texas to S. Am.
- Calymenia** Pers. = *Oxybaphus* Vahl (*BH.*) = *Mirabilis* L. p.p.
- Calymmanthera** Schlechter. Orchidaceae (11. 20). 3 New Guinea.
- Calypso** Salisb. Orchidaceae (11. 4). 1 cold N. temp.
- Calypso** Thou. = *Salacia* L. (Hippocrat.).
- Calypsogyne** Neraud. Inc. sed. Nomen.
- Calypteris** Zipp. Inc. sed. 1, habitat?
- Calypsocarpus** Less. Compositae (5). 1 Texas, Mex.
- Calyptranthes** Sw. Myrtaceae (1). 80 trop. Am., W.I. Ed. fr.
- Calyptrate**, capped.
- Calyptrella** Naud. Melastomaceae (1). 5 trop. Am.
- Calyptridium** Nutt. Portulacaceae. 5 California.
- Calyptrion** Ging. (*Corynostylis* Mart.). Viol. 1 trop. S. Am.
- Calypetrocalyx** Blume. Palmae (iv. 1). 6 Austr., Moluccas.
- Calypetrocarpus** Less. Compositae (5). 1 Texas, Mex.
- Calypetrocarya** Nees. Cyperaceae (11). 5 Guiana, Brazil.
- Calypetrochilum** Krzl. Orchidaceae (11. 20). 1 Cameroons.
- Calypetrogyne** H. Wendl. Palmae (iv. 1). 3 Centr. Am.
- Calyptronoma** Griseb. (= last, *BH.*). Palmae (iv. 1). 4 trop. Am.
- Calyptrostegia** C. A. Mey = *Pimelea* Banks p.p. (Thymel.).
- Calypthrotheca** Gilg. Capparidaceae (11). 3 trop. Afr.
- Calystegia** R. Br. Convolvulaceae (1). 10 temp. and sub-trop. 2 Brit.,
C. Soldanella R. Br. on the coasts, and *C. sepium* R. Br. in hedges.
 The fert. of this sp. depends largely on the visits of a hawk-moth
 (*Sphinx convolvuli*) and the distr. areas of the two correspond to some
 extent (*cf.* *Aconitum*). Often united to *Convolvulus* (*q.v.*).
- Calythrix** Labill. (*Calycothrix*). Myrt. (11. 2). 40 Austr. Cult.
 orn.
- Calyx**, the outer protective portion of the perianth, usu. of green l.
 (sepals). For descriptive terms, &c. see Perianth; **-tube**, the lower
 continuous portion of a gamosepalous calyx; **water-holding-**, *Par-*
mentiera, *Spathodea*.
- Camarea** St. Hil. Malpighiaceae (1). 10 E. S. Am.
- Camaridium** Lindl. Orchidaceae (11. 18). 15 trop. S. Am., W.I.
- Camarotea** Elliot. Acanthaceae (iv. A). 1 Madag.
- Camarotis** Lindl. (*Sarcochilus* *BH.*). Orchid. (11. 20). 2 E. Indies.
- Camassia** Lindl. Liliaceae (v). 2 N. Am. The bulbs (quāmash) form
 a food for the Indians of N. A.
- Cambessedesia** DC. Melastomaceae (1). 15 S. Brazil.
- Cambium**, the actually growing layer in a stem, &c.
- Cambogia** L. = *Garcinia* L. p.p. (Guttif.).
- Camel-thorn**, *Athagi maurorum* Medic.
- Camelina** Crantz. Cruciferae (4). 8 Eur., Medit. *C. sativa* Cr.
 (gold of pleasure, Brit.) is used as a source of fibre in S. Eur.
- Camelinus** (Lat.), tawny.
- Camellia** L. (*Thea* L. p.p.). Theaceae. 8 Ind., China, Japan. *C. ja-*
ponica L. and others cult. orn. fls. *C. Thea* Link., *C. viridis* Link.,
 and *C. Bohea* Lindl. = *T. sinensis*.
- Camelostalis** Pfitzer (*Pholidota* p.p.). Orchid. (11. 3). 1 Java.
- Cameraria** (Plum.) L. Apocynaceae (1. 3). 2 W. Ind.

Camilleugenia Frappier (*Cynorchis* p.p.). Orchid. (II. 1). 1 Madag.
Camnium (Cl.), a succession due to cultivation.

Camboensia Welw. ex B. and H. Leguminosae (III. 1). 3 W. trop.
 Afr. *C. maxima* Welw. is a magnificent flowering creeper.

Camomile, *Anthemis*.

Campanales (BH.). The 3rd cohort of Gamopetalae.

Campanea Decne. Gesneriaceae (II). 6 C. Am.

Campanocalyx Valetton. Rubiaceae (I. 7). 1 Borneo.

Campanolea Gilg et Schellenberg. Oleaceae. 1 Cameroons.

Campanula (Tourn.) L. Campanulaceae (I. 1). 300 N. temp. and trop. Mts., esp. Medit.; 8 Brit. incl. *C. rotundifolia* L. (harebell, blue-bell of Scotland). The pollen is shed in the bud, the sta. standing closely round the style and depositing their pollen upon the hairs. As the fl. opens the sta. wither, exc. the triangular bases that protect the honey, and the style presents the pollen to insects. After a time the stigmas separate and the fl. is ♀; finally the stigmas curl right back on themselves and effect self-pollin. (See fam. and cf. *Phyteuma*, *Jasione*.) Seeds light and contained in a caps., which if erect dehisces at the apex, if pend. at the base, so that the seeds (cf. *Aconitum*) can only escape when the plant is shaken, e.g. in strong winds. Several are cult. (Canterbury bells, &c.).

Campanulaceae (EP., BH.). Dicots. (Symp. Campanulatae). 60 gen. 1000 sp., temp. and sub-trop., mostly perennial herbs (a few trees and shrubs), with alt., exstip. l., and usu. with latex. The infl. may term. the primary axis, or one of the second order. It is generally racemose, ending with a term. fl. in Campanuloideae. In some cases, instead of single fls. in the axils of the bracts of the raceme, small dich. occur (cf. Labiatae). Others have the whole infl. cymose (*Canarina*, *Pentaphragma*, &c.).

Fl. usu. ♂, reg. or ♂, epig., generally 5-merous, the odd sepal post. in Campanuloideae, but anterior in the other groups. In these, however, a twisting of the axis through 180° takes place before the fl. opens (cf. Orchids), so that the odd sepal is finally post. K 5, open; C (5) valvate; A 5 epig.; anthers intr., sometimes united; $\bar{G}$ (5), (3) or (2), multi-loc. with axile plac. bearing ∞ anatrop. ov. Style simple; stigmas as many as cpls. Caps. dehiscent in various ways in different gen., or berry. Fleshy endosp.

The nat. history of the fl. is of interest, both in itself and as exhibiting transitions to the Composite type. Honey is secreted by a disc at base of style and covered in most cases by the triangular bases of the sta., which fit closely together and only allow of the insertion of a proboscis between them. This, taken together with the size of the fls., their frequently blue colour and pendulous position, points to their being best adapted to the visit of bees, as is the case, but there are also many other visitors of various insect classes, so that this fam. cannot be placed in the fl. class H but must go into B. A few exceptions occur; the bulk of the fam. has large fls., conspicuous by themselves, but *Phyteuma* and *Jasione* have small fls. massed in heads, and come into class B' along with the Compositae.

The general principle of the fl. mech. is the same throughout, and agrees with that of Compositae. The fl. is very protandr., and the

style (with the stigmas closed up against one another) has the pollen shed upon it by the anthers, either in the bud or later. Usu. there is a bunch of hairs upon the style to hold the pollen. For some time the style acts as pollen-presenter to insects; after a time the stigmas separate and the ♀ stage sets in, and finally, in many cases, the stigmas curl back so far that they touch the pollen still clinging to their own style, and thus effect self-pollin. See genera, esp. *Campanula*, *Phyteuma*, *Jasione*, *Lobelia*, and cf. *Compositae*.



Floral diagram of *Campanula* ;
after Eichler.

Classification and chief genera (after Schönland):

I. **CAMPANULOIDEAE** (fl.

actinomorphic, rarely slightly zygomorphic; anthers usu. free):

1. *Campanuleae* (cor. valvate; fl. symmetrical): *Campanula*, *Phyteuma*, *Wahlenbergia*, *Platycodon*, *Jasione*.

2. *Pentaphragmeae* (cor. valvate; fls. asymmetric, in cincinni): *Pentaphragma* (only genus).

3. *Sphenocleae* (cor. imbricate): *Sphenoclea* (only genus).

II. **CYPHIOIDEAE** (fl. zygomorphic; sta. sometimes united; anthers free): *Cyphia*, *Nemacladus*.

III. **LOBELIOIDEAE** (fl. zygomorphic, rarely almost actinomorphic; anthers united): *Centropogon*, *Siphocampylus*, *Lobelia*.

Campanulastrum Small (*Campanula* p.p.). Campan. (I). 1 N. Am.

Campanulatae. The 10th order of Dicotyledons (Sympet.).

Campanulate, bell-shaped.

Campanulopsis Zoll. et Morr. Campanul. (inc. sed.). 1 Malaya.

Campanulinae (Warming). The 9th cohort of Sympetalae.

Campanumoea Blume. Campanulaceae (I. I). 5 Indomal.

Campbellia Wight = *Christisonia* Gardn. (Orobanch.).

Campderia Benth. (*Coccoloba* p.p. EP.). Polygon. (III. I). 4 trop. Am.

Campe Dulac = *Barbarea* R. Br. (Crucif.).

Campeachy wood (W.I.), *Haematoxylon campechianum* L.

Campeia Rich. Commelinaceae. 1 trop. Am., W.I. Ed. fr.

Campereia Griff. Santalaceae. 2 Malaya.

Campestris (Lat.), growing in fields.

Camphor, an aromatic crystalline body, obtained by distillation from the wood or l. of *Cinnamomum Camphora* Nees et Eberm.; ai-,

Blumea balsamifera DC.; **Barus** or **Borneo**, *Dryobalanops aromatica* Gaertn.; **ngai-**, =ai; **Sumatra-**, =Borneo.

Camphora (Bauh.) L. = *Cinnamomum* Tourn. (Laur.).

Camphorosma L. Chenopodiaceae (A). 8 E. Medit., Cent. As.

Campimia Ridl. Melastomaceae (I). 2 Malaya.

Campion, *Lychnis*, *Silene*; **bladder**, *S. inflata*; **moss**, *S. acaulis*.

Campnosperma Thw. Anacardiaceae (3). 10 trop.

Campomanesia Ruiz et Pav. Myrtaceae (I. I). 80 S. Am. Ed. fr.

Campsiandra Benth. Leguminosae (II. 8). 3 trop. Am.

- Campsidium** Seem. (*Tecoma BH.*). Bignon. (2). 1 Chili.
Campsis Lour. (*Tecoma BH.*). Bignon. (2). 2 E. U.S., Japan.
Camptandra Ridl. Zingiberaceae. (1). 4 Malaya.
Campteria Pr. = *Pteris* L. (Filic.).
Camptocarpus Decne. Asclepiadaceae (1). 5 Mauritius, Madag.
Camptolepis Radlk. Sapindaceae (1). 1 E. trop. Afr.
Camptoloma Benth. Scrophulariaceae (III. 1). 2 trop. Afr.
Camptosema Hook. et Arn. Leguminosae (III. 10). 12 S. Am.
Camptosorus Link. Polypodiaceae. 2 N. Am., N. As. A xero. fern, whose prothalli can stand drought.
Camptostemon Mast. Bombacaceae. 2 N. Austr., Phil. Is.
Camptostylus Gilg. Flacourtiaceae (1). 1 E. trop. Afr.
Camptotheca Decnè. Nyssaceae. 1 China, Tibet.
Campuloclinium DC. = *Eupatorium* Tourn. p.p. (Compos.).
Campylandra Baker (*Tupistra* p.p. *BH.*). Lili. (VII). 1 Bhutan.
Campylanthus Roth. Scrophulariaceae (III. 1). 5 Afr., Arabia, &c.
Campylia Lindl. ex Sweet = *Pelargonium* L'Hérit. p.p. (Geran.).
Campylobotrys Lem. = *Hoffmannia* Sw. (Rubiaceae).
Campylocentron Benth. Orchid. (II. 20). 25 trop. Am., W.I.
Campylochiton Welw. ex Hiern. (*Combretum* p.p. *EP.*). Comb. 1 trop. Afr.
Campylogyne Welw. ex Hemsl. (*Combretum* p.p. *EP.*). Comb. 1 trop. Afr.
Campyloneurum Presl. = *Polypodium* L. (Filic.).
Campylosiphon Benth. Burmann. 1 trop. S. Am. Saprophytic.
Campylospermum Van Tieghem = *Ouratea* Aubl. (Ochn.).
Campylos achys Kunth. Verbenaceae (2). 1 S. Afr.
Campylostemon Welw. Hippocrateaceae. 5 trop. W. Afr.
Campylotropous (ovule). curved into a U shape.
Campylus Lour. Inc. sed. 1 China.
Campynema Labill. Amaryllidaceae (IV). Austr. Tasm. See fam.
Campynemanthe Baill. Amaryllidaceae (IV). 1 New Caled.
Camwood, *Baphia nitida* Afzel.
Canada balsam, *Abies balsamea* Mill.; -pitch, *Tsuga canadensis* Carr.; -rice, *Zizania aquatica* L.
Canaigre, *Rumex hymenosepalus* Torr.
Cananga Rumph. ex Hook. f. et Thoms. Anonaceae (1). 3 trop. E. As. to Austr. *C. odorata* Hook. f. is cult. for its fls., which yield the perfume known as ylang-ylang or Macassar oil.
Canariastrum Engl. Burseraceae. 1 trop. Afr. (? = *Uapaca*).
Canariellum Engl. Burseraceae. 1 New Caledonia.
Canarina L. Campanulaceae (I. 1). 3 Canary Is., trop. Afr. Like *Campanula*, but usu. 6-merous, and with ed. berry fr.
Canarium (Rumph.) L. Burseraceae. 80 trop. As., Afr. *C. commune* L. (Java almond; ed. seed) furnishes the resin Manila Elemi (see *Bursera*). *C. strictum* Roxb. (Malabar) and other sp. furnish some of the black dammar of commerce (cf. *Agathis*).
Canary creeper, *Tropaeolum peregrinum* L. (*canariensis* Hort.); -grass, -seed, *Phalaris canariensis* L.; -whitewood, *Liriodendron tulipifera* L.
Canavalia DC. Leguminosae (III. 10). 12 trop. *C. ensiformis* DC.

(sword or sabre bean, overlook) cult. ed. pods. *C. obtusifolia* DC. is a common trop. shore plant.

Canbya Parry. Papaveraceae (11). 2 California, Mex.

Cancellate, latticed.

Cancrinia Kar. et Kir. Compositae (7). 1 Centr. As.

Candidus (Lat.), pure white.

Candle-nut, *Aleurites*; **-plant**, *Dictamnus*; **-tree**, *Parmentiera*; **-wood** (W. I.), *Sciadophyllum*, *Amyris*.

Candollea Labill. in Ann. Mus. Par. 1805 (*Stylidium* Sw., g.v.). Stylidiaceae. 85 Austr., N. Z., E. As.

Candollea Labill. 1806 = *Hibbertia* Andr. p.p. (Dillen.).

Candolleaceae = Stylidiaceae.

Candy-tuft, *Iberis amara*, L.

Cane, a commercial term for stems of grasses (esp. bamboos), climbing palms, &c.; **bamboo-**, cf. bamboos; **-brake**, *Arundinaria*; **dumb-**, *Dieffenbachia*; **Malacca-**, *Calamus*; **rattan-**, *Calamus*, and cf. Rattan; **sugar-**, *Saccharum officinarum* L. **Tobago**, *Bactris minor* Jacq.; **Whangee-**, *Phyllostachys*.

Canella P. Br. (*Winterana* L.). 2 W. Ind., trop. Am. *C. alba* Murr. yields Canella bark, used as a tonic and stimulant.

Canella bark, see last.

Canellaceae = Winteranaceae.

Canephora Juss. Rubiaceae (I. 8). 1 Madagascar. Fls. in clusters at the top of a phyllodineous stalk with a 2-lobed calyculus.

Canescent, grey or hoary.

Canistrum Morren (*Aechmea* p.p. BH.). Bromel. (4). 4 Brazil.

Canker-berry (W. I.), *Solanum bahamense* L.

Canna L. Cannaceae. 40 trop. and subtrop. Am., *C. indica* L. cosmop. trop. Many sp., vars. and hybrids, cult. *C. indica* (Indian shot) is the basis of most of these. Habit like Zingiberaceae or Marantaceae, but *C.* can be distinguished even when not in fl. by possessing neither the ligule of the former nor the pulvinus of the latter. Infl. term. usu. composed of 2-fl. cincinni. The two fls. are homodromous, but the bracteole is to the right in one and to the left in the other (behind one or other of the two lat. sepals in the diagram). Fl. ♂, asymmetric, epig. K 3, C (3). The A is the most conspicuous part. There is a leafy sta. bearing half an anther on one edge, and a number of petaloid structures round it, usu. 3 but sometimes 1 or 4. One of these is the labellum (not = that of Zingiberaceae), and is rolled back on itself outwards. The other two are often termed the wings (α β in diagram). When a fourth std. (γ , cf. Marantaceae) is present it stands behind the fertile sta. Other sp. have only the labellum. $\bar{G}$ (3) with petaloid style, 3 loc.; ov. in 2 rows in each loc., anatr. Caps., usu. warty. Seed with perisperm and straight embryo.



Floral diagram of *Canna indica* (after Eichler). The bracteole is omitted. S = petaloid style; L = labellum; α β = staminodes.

As to the morphological explanation of the A, there are two views

Eichler (*Blütendiag.* i. p. 174) regards the labellum as a lat. sta. of the inner whorl, and the fertile sta. together with all the stds. as the post. sta. of the same whorl; the other sta. of the inner, and all the sta. of the outer, whorl are wanting. The older view looks upon β , γ , as the 2 post. sta. of the outer whorl, and the labellum, α , and the fertile sta. as the 3 sta. of the inner whorl. (Cf. this fl. with those of Musaceae, Zingiberaceae and Marantaceae.)

The pollen is shed upon the style in the bud; insects alight on the labellum, touch first the term. stigma and then the pollen. The rhiz. of *C. edulis* Ker-Gawl. is ed., containing much starch.

Cannabaceae (Warming) = § IV. of Moraceae (*q.v.*).

Cannabis (Tourn.) L. Moraceae (IV). 1 Cent. As., *C. sativa* L., the hemp. Infl. like *Humulus* ♂, dioec. Hemp is largely cult. both in temp. and trop. regions, in the former for the fibre, in the latter for the drug. A valuable fibre, used for ropes and other purposes, is obtained from the inner bark of the stem, much as flax is prepared from *Linum*, and for this purpose the plant is cult. in S. Eur., the eastern U.S., and other countries. In the trop., and esp. in India, the pl. is cult. for the sake of the narcotic resin which exudes from it, and which is used much like opium, both as a drug and as a stimulant. The drug occurs in three common forms, ganja, charas, and bhang. The first is the ♀ flg. tops with resin on them, packed together, the second, which comes from rather cooler climates, is the resin knocked off the twigs, bark, &c., and the third, which is largely obtained from the wild plants, is the mature l., with their resinous deposit, packed together. Asiatics are much addicted to the use of hemp as a narcotic. It is smoked, with or without tobacco, and an intoxicating liquor, hashish, is made from it. The resin has an intoxicating stimulating effect. In small quantities it produces pleasant excitement, passing into delirium and catalepsy if the quantity be increased. The names given to the plant among them indicate this use of it, *e.g.* leaf of delusion, increaser of pleasure, cementer of friendship. The sale of ganja and charas is kept in check in India by a stringent licensing system, but that of bhang, which is collected from the wild plants, is not so easy to control.

Cannaceae (*EP.*; *Scitamineae* p.p. *BH.*). Monocotyledons (*Scitamineae*). Only genus *Canna* (*q.v.*).

Cannomois Beauv. Restiaceae. 8 S. Afr.

Cannon-ball tree, *Couroupita guianensis* Aubl.

Canotia Torr. 1 Calif., New Mexico, doubtfully placed in Rutaceae, but perhaps belonging to Celastraceae.

Canscora Lam. Gentianaceae (1). 18 palaeotrop.

Cansjera Juss. Opiliaceae. 4 trop. As., Austr.

Cantaloupe, melon, *Cucumis Melo* L.

Canterbury bell, *Campanula*.

Cantharoppermum Wight et Arn. (*Atylosia BH.*). Leguminosae (III. 10). 20 Madag., trop. As. and Austr.

Canthium Lam. = *Plectronia* L. (Rubiaceae).

Canthopsis Miq. (*Randia* p.p. *EP.*). Rubiaceae (I. 8). 1 Timor.

Cantua Juss. Polemoniaceae. 8 Peru, Bolivia.

Cantuffa Gmel. (*Pterolobium* R. Br.). Legum. (II. 7). 5 palaeotrop.

Canus (Lat.), grey-white.

Caopia Adans. = *Vismia* Vand. (Guttif.).

Caoutchouc, see Rubber.

Capanemia Barb. Rodr. (*Quekettia* EP.). Orch. (II. 19). 2 Brazil.

Caparrosa, *Neea theifera* Oerst.

Cape aster, *Felicia*; -chestnut, *Calodendron*; -cowslip, *Lachenalia*; -crocus, *Gethyllis*; -figwort, *Phygelius*; -forget-me-not, *Anchusa*; gooseberry, *Physalis*; -honeysuckle, *Tecoma*; -jasmine, *Gardenia*; -lily, *Crinum*; -pondweed, *Aponogeton*; -primrose, *Streptocarpus*; -tulip, *Haemanthus*.

Caper, *Capparis spinosa*, L.

Caperonia St Hil. Euphorbiaceae (A. II. 2). 33 trop. Am., Afr.

Capet tree (W.I.), *Capparis verrucosa* Jacq.

Capillary, hair-like.

Capirona Spruce. Rubiaceae (I. 4). 1 S. Am. K like *Mussaenda*.

Capitania Schweinf. Labiatae (VII). 1 E. Afr.

Capitate, head-like.

Capitularia J. V. Suringar. Cyper. (III). 1 New Guinea.

Capitulum, a head of fl., *Compositae*, *Cornac.*, *Dipsac.*, &c.

Capnites Dum. = *Corydalis* Vent. (Papav.).

Capnoides Tourn. ex Adans. = *Corydalis* Vent. (Papav.).

Capnophyllum Gaertn. Umbelliferae (III. 6). 4 Medit., S. Afr.

Capnoreia Rafn. = *Hesperochiron* S. Wats. (Hydrophyll.).

Capparidaceae (EP, BH.). Dicots. (Archichl. Rhoeadales; Parietales BH.). 40 gen., 450 sp., trop. and warm temp., many xero., with reduced, often inrolled, l. (*cf.* *Empetrum*). Herbs or shrubs, with alt. simple or palmate l., often with stips. (frequently repres. by thorns or glands). Fls. ♀, reg., usu. in racemes, bracteate but without bracteoles. The P resembles that of *Cruciferae* (K 2 + 2, C 4 diagonal), but great var. occurs in the A. In some sp. of *Cleome* there are 4 sta. in two whorls, but elsewhere there are more. Some sp. of *Cleome*, &c. show tetradynamous sta. In others, still further branching of the median sta. occurs and usu. the post. sta. is more branched than the ant. Staminody of some of the branches is frequent. Cpls. typically (2), transv. as in *Cruciferae*, with parietal plac. In many sp. of sub-order II the number rises to 10 or 12 by the addition of a second whorl of cpls. and by *dédoublement*. Ovules ∞, campylotropous.

A further complication is the presence of axial effigurations, &c. in the fls. A disc may occur between P and sta. (usually thicker at the post. side), or a gynophore between sta. and ov., or both. Or the disc may grow up in the centre to form an androphore on which the sta. are borne and above them there may be a gynophore also. From the disc there often grow out structures of various shapes and sizes; these may be scales quite free from one another, or, as in *Cadaba*, &c., may be united into a tube. Or the scales may, as in *Steriphoma*, &c., alt. with and be joined to the sepals.

Fr. a siliqua (with replum), nut, berry or drupe. Seed exalb. with embryo folded in various ways as in *Cruciferae*. Few are useful: see *Capparis*, &c.

Classification and chief genera (after Pax):

- A. Mostly shrubs, with hairs or scales, rarely glandular. No replum.
 I. *DIPTERYGIOIDEAE* (samara): *Dipterygium* (only genus).
 II. *CAPPARIDOIDEAE* (berry): *Capparis*, *Cadaba*, *Maerua*.
 III. *ROYDSIOIDEAE* (drupe): *Roydsia*.
 IV. *EMBLINGIOIDEAE*. Prostrate undershrubs. Calyx tube present. Petals (2). Nut. *Emblingia* (only genus).
 B. Glandular annuals. Silique with replum.
 V. *CLEOMOIDEAE*: *Cleome*, *Polanisia*.

Capparis (Tourn.) L. *Capparidaceae* (II). 150 trop. and sub-trop. (exc. N. Am.). Many climb by recurved stip. thorns. The fl.-buds of *C. spinosa* L. (Medit.) are known as capers (*cf.* *Eugenia*).

Capraria (Tourn.) L. *Scrophulariaceae* (III. 1). 4 warm Am.

Capreolatus (Lat.), tendrilled.

Caprification, *cf.* *Ficus*.

Caprificus Gasp. = *Ficus* Tourn. p.p. (*Morac.*).

Caprifoliaceae (*EP.*; *BH.* incl. *Adoxaceae*). Dicots. (*Sympet.* *Rubiales EP., BH.*). 11 gen., 230 sp. temp. (chiefly N.) and on trop. Mts. Mostly trees and shrubs with decussate usually exstip. leaves (see *Sambucus*). Fls. ♂, reg., or in cymes, usually 5-merous with the odd sepal post. Sta. in one whorl, epipet. $\bar{G}$ (2—5), multi-loc. with 1— ∞ pend. ov. in each loc. Fr. usu. berry or drupe (caps. in *Diervilla*). Embryo small in fleshy endosp. [*BH. chars.* include herb with rad. l. and small head of fl.; P homochlam.; G semi-inf.] *Chief genera*: *Sambucus*, *Viburnum*, *Symphoricarpus*, *Linnaea*, *Lonicera*, *Diervilla*.

Caprifolium Tourn. ex L. = *Lonicera* L. p.p. (*Caprifol.*).

Capsella Medic. *Cruciferae* (4). 4 N. temp. *C. Bursa-pastoris* Medic. (shepherd's purse) in Brit. and a cosmop. weed, self-pollinated. In early spring and late autumn the sta. are often $\pm$ aborted. The l. vary in shape and degree of division in various situations. Solms (*Bot. Zeit.* 1900, p. 167) describes *C. Heegeri*, a new form which has an elongated fr., which has arisen from the shepherd's purse, and is almost generically distinct.

Capsicum (Tourn.) L. *Solanaceae* (2). 30 C. and S. Am., 1 Japan. *C. annuum* L. cult.; its fr. are chillies or red peppers; dried and ground they form Cayenne pepper. Other sp. are used. (See Irish in *Rep. Miss. Bot. Gdn.*, 1898, for revision of cult. forms.)

Capsule, a dry dehiscent fruit of > 1 carpel.

Capura Blanco (*Otophora* Blume, *EP.*). *Sapind.* (1). 1 Phil. Is.

Capura L. = *Wikstroemia* Endl. (*Thymel.*).

Caracasia Szysz. *Marcgraviaceae*. 2 Venezuela.

Caragana Lam. *Leguminosae* (III. 6). 40 Cent. As., China.

Caraguata (Plum.) Lindl. (*Guzmania* Ruiz et Pav.). *Bromel.* (1). 20 S. Am. Cult. orn. infl.

Caraguata fibre, *Bromelia*, *Eryngium*, *Furcraea*, &c.

Caraipa Aubl. *Guttiferae* (1). (*Ternstroem*, *BH.*) 12 trop. S. Am. They yield a useful hard timber (*tamacoari*), and a medicinal balsam.

- Carallia** Roxb. ex R. Br. Rhizophoraceae. 10 palaeotrop., exc. Afr. Disc. usu. double
- Caralluma** R. Br. Asclepiadaceae (II. 3). 60 Medit. to E. Ind.
- Caramba**, **Carambola**, *Averrhoa Carambola* L.
- Caranda** Gaertn. Inc. sed. 1 Ceylon.
- Carapa** Aubl. Meliaceae (III). 10 trop. *C. procera* DC. and *C. guianensis* Aubl. seeds yield a good oil (carapa, touloucouna, andiroba, coondi). *C. moluccensis* Lam. among the mangroves (*q.v.*).
- Carapichea** Aubl. = *Cephaelis* Sw. (Rubiaceae).
- Carat**, *Ceratonis Siliqua* L.
- Caraway seed**, *Carum Carvi* L.
- Carbenia** Adans. (*Cnicus* p.p. *EP.*). Compos. (II). 1 Medit.
- Carbohydrates**, bodies containing C, H, and O, in the proportions C_x , H_{2y} , O_y ; cellulose, starch, sugar, &c.
- Carcerulus**, fruit of Labiatae
- Carda** Nor. Inc. sed. Nomen.
- Cardamine** (Tourn.) L. (*BH.* incl. *Dentaria* L.). Cruciferae (2). 100 cosmop., chiefly temp. *C. pratensis* L. (cuckoo-flower) and others in Brit. *C. impatiens* L. has an explosive fruit like that of *Eschscholtzia*. *C. chenopodiifolia* Pers. (S. Am.) possesses two kinds of fr. Those formed on the upper part of the plant are normal siliquae; at the base, in the axils of the l. of the rosette cleist. fls. form which burrow into the soil and produce fr. there (cf *Arachis*, *Trifolium*, &c.). In *C. pratensis* there is extensive veg. repr. by adv. buds on the radical l. and in *C. (D.) bulbifera* R. Br. by means of axillary bulbils. See Schulz, Monograph in *Engl. Jb.* 32, p. 280.
- Cardaminopsis** Hayek. Cruciferae (2). 4 *.
- Cardamoms**, *Elettaria Cardamomum* Maton, *Amomum*.
- Cardamomum** Noronha = *Elettaria* Maton (Zingib.).
- Cardanthera** Buch.-Ham. (*Synnema EP.*). Acanth. (IV. A). 10 palaeotrop.
- Cardia** Dulac = *Veronica* Tourn. (Scroph.).
- Cardiaca** (Tourn.) L. = *Leonurus* L. p.p. (Comp.).
- Cardiacanthus** Schau. (*Jacobinia* p.p. *BH.*). Acanth. (IV. B). 1 Mex.
- Cardiandra** Sieb. et Zucc. Saxifr. (III) 1 China, Japan.
- Cardinal flower**, *Lobelia cardinalis* L.
- Cardiobatus** Greene (*Rubus* p.p.). Rosac. (III. 2). 1 N. Am.
- Cardiocarpus** Reinw. = *Soulamia* Lam. (Simarub.).
- Cardiochlamys** Oliv. Convolvulaceae (I). 1 Madag.
- Cardiogyne** Bur. (*Plecosperrum BH.*). Morac. (I). 1 trop. Afr. The wood yields a dye.
- Cardiopetalum** Schlecht. (*Stormia* Moore). Anon. (I). 1 Braz.
- Cardiopteris** Wall Icacinaceae (Olacineae *BH.*). 3 Indomal.
- Cardiospermum** L. Sapindaceae (I), 15 trop., esp. Am.
- Cardoon**, *Cynara Cardunculus* L.
- Cardopatium** Juss. (*Broteroa EP.*). Compositae (II). 2 Medit.
- Carduncellus** Adans. Compositae (II). 2 Medit.
- Carduus** (Tourn.) L. This gen., *Cnicus* and *Cirsium* are nearly allied, and scarcely any floras agree in the sp. assigned to them. See *Index Kewensis*.

- Compositae (11). 20 Eur., N. Afr., As. (thistles). *C. nutans* L. and others in Brit.
- Cardwellia** F. Muell. Proteaceae (11). 1 Queensland.
- Carelia** Less. Compositae (2). 1 S. Brazil.
- Carex** (Dill.) L. Cyperaceae (11). 800 N. and S. temp., in marshes, &c. About 60 Brit. (sedges). Grass-like pl. Pseudo-spikelets 1-fl'd., in long spikes, which are sometimes unisex., sometimes with both ♂ and ♀ fls. The ♀ fl. has a second glume (see fam.). The fls. are protog. and wind-fert. There is considerable veg. repr. by offshoots. Many Brit. sp. are alpine; others, e.g. *C. arenaria* L., grow on sand-dunes and have the habit of *Ammophila*.
- Careya** Roxb. Lecythidaceae (Myrtaceae, BH.). 4 Indomal., Austr. *C. arborea* Roxb. (patana oak) is almost the only tree on the great grassy expanses known as patanas in Ceylon.
- Carica** L. Caricaceae. 35 sp. warm Am. *C. Papaya* L. (papaw), universally cult. in the trop. for its fr. The l. and the unripe fr. contain a milky juice in which is the proteid-ferment papain, and in Ceylon, &c. it is collected for use in digestive salts. Meat wrapped in the l. and buried becomes tender through a partial digestion of the fibres (Umney in *Kew Bull.* 1897). *C. candamarcensis* Hook. f. is also cult. in trop. mountains for its ed. fr.
- Caricaceae** (EP.; *Passifloraceae* p.p. BH.). Dicot. (Archichl. Parietales). 2 gen., 40 sp. trop. Am. Small trees, branched or not, with a term. crown of l. and milky juice. Fls. in loose infls., unisex. 5-merous, C twisted in bud; ♂ with long C tube and 2 whorls intr. epipet. sta.; ♀ with short tube, 1- or 5-loc. ov., short style, and 5 stigmas: ov. ∞ anatropous on parietal plac. Berry. Endosp.
- Caricature pl.** (Ceylon), *Graptophyllum hortense* Nees.
- Caries**, decay.
- Carina**, a keel, *Leguminosae*.
- Cariniana** Casar. (*Couratari* Aubl. BH.). Lecythidaceae. 7 trop. Am. Wood (jiquitiba) valuable.
- Carionia** Naud. Melastomaceae (1). 2 Phil. Is.
- Carissa** L. (*Arduina* Mill.). Apocynaceae (1. 1). 20 sp. W. Afr. to Austr. Shrubs with branch thorns. *C. Carandas* L. has ed. fr.
- Carlemannia** Benth. Rubiaceae (1. 2). 3 Himal.
- Carlesia** Dunn. Umbelliferae (111. 5). 1 China.
- Carlina** L. Compositae (11). 20 Eur., Medit. *C. vulgaris* L. (carline-thistle) Brit. *C. acaulis* L. is the weather-thistle of the Alps, &c. The outer bracts of the involucre are prickly, the inner membranous and shining. They spread out like a star in dry air, but in damp weather bend inwards.
- Carline thistle**, *Carlina vulgaris* L.
- Carlolea** Arruda. Inc. sed. 2 Brazil.
- Carlowrightia** A. Gray. Acanth. (IV. B). 15 S.W. U.S., Mex., N.Z.
- Carludovica** Ruiz et Pav. Cyclanthaceae. 40 trop. Am. Habit that of a small palm (a few climbers) with short stem and fan l., in whose axils arise the infls. Each is a cylindrical spadix, enclosed at first in a number of br., which fall off and leave it naked. Its surface is

- Carpet plant**, *Ionopsidium acaule*; -weed (Am.), *Mollugo*.
Carpha Banks et Soland. Cyperaceae (1). 4 S. temp.
Carphalea Juss. Rubiaceae (1. 2). 1 Madag.
Carphephorus Cass. Compositae (2). 5 E. U.S.
Carpobolus Schott = *Piptocarpha* R. Br. (Comp.)
Carpochaete A. Gray. Compositae (2). 4 S.W. U. S., Mex.
Carpinus L. Betulaceae (1). 21 N. temp.; chiefly E. As. *C. Betulus* L. Brit. (hornbeam). The young l. hang downwards as the shoot expands. The ♀ catkins are term. on long shoots, the ♂ are themselves short shoots. In the axil of each scale of the latter are 4—12 sta. each split almost to the base. No bracteoles are present, so that it is doubtful how many fls. of the possible 3 (see fam.) are repres. In the ♀ there are the 2 lat. fls. with all 6 bracteoles. On the top of the 2-loc. ovary is a small P. Fr. a 1-seeded nut with a 3-lobed leafy wing on one side, whose centre lobe corresponds to the bract α or β , the lat. lobes to the bracteoles α' , β' ; these unite and grow large after fert. The timber is little used.
Carpoceras Link. = *Thlaspi* Tourn. (Crucif.).
Carpodetus Forst. Saxifragaceae (v). 1 New Zealand.
Carpodinus R. Br. ex Sabine. Apocyn. (1. 1). 50 trop. Afr. Rubber is obtained by grating and boiling from the rhiz. of *C. lanceolatus* K. Sch. &c. (cf. *Clitandra*; *Bot. Centr.* 72, p. 116).
Carpodiptera Griseb. Tilaceae. 6 E. Afr., Cuba.
Carpolobia G. Don. Polygalaceae. 6 trop. W. Afr.
Carpolyza Salisb. (*Hessea* Berg.). Amaryllidaceae (1). 4 S. Afr.
Carponema Eckl. et Zeyh. Cruciferae (1). 4 S. Afr.
Carpopogon Roxb. = *Mucuna* Adans. (Legum.).
Carpotroche Endl. Flacourtiaceae (2). 6 trop. Am.
Carpoxylon H. Wendl. et Drude. Palmae (IV. 1). 1 New Hebrides.
Carrichtera Adans. Cruciferae (2). 1 Medit.
Carrierea Franch. Flacourtiaceae (4). 1 China.
Carriion-flower (Am.), *Smilax herbacea* L.; -flowers, fls. with a smell of carrion, visited esp. by carrion-loving flies, *Amorphophallus*, *Araceae*, *Stapelia*, &c.
Carronia F. Muell. Menispermaceae. 1 New S. Wales.
Carrot, *Daucus Carota* L.
Carruthersia Seem. Apocynaceae (II. 1). 4 Polynesia.
Carsonia Greene (*Cleome* p.p.). Capparid. (v). 1 N. Am.
Cartagena bark, *Cinchona cordifolia* Mutis.
Cartiera Small. Orchidaceae (II. 2). 1 Florida, Bahamas.
Carthamus (Tourn.) L. Compositae (II). 25 Medit., Afr., As. *C. tinctorius* L. (safflower) cult. in Asia, &c.; its fls. are used in dyeing; powdered and mixed with talc they form rouge.
Cartiera Greene (*Streptanthus* p.p.). Crucif. (1). 6 N. Am.
Cartilaginous, firm and tough; endosp. of *Liliaceae*.
Cartonema R. Br. Commelinaceae. 6 trop. Austr.
Carum Rupp. ex L. (BII. incl. *Bunium* L., *Petroselinum* Hoffm.). Umbelliferae (III. 5). 20 sp. temp. and sub-trop. 3 Brit., of which *C. Carvi* L. is cult. for its fr. (caraway seeds).
Caruncle, a small hard aril, *Buxaceae*, *Euphorbiaceae*.
Carvalhoa K. Schum. Apocynaceae (II. 1). 2 E. trop. Afr.

Carya Nutt. Juglandaceae. 10 sp. N. Am., the hickory trees, cultivated for their wood, which is very tough and elastic, and for the edible fruit (pecans, like walnuts).

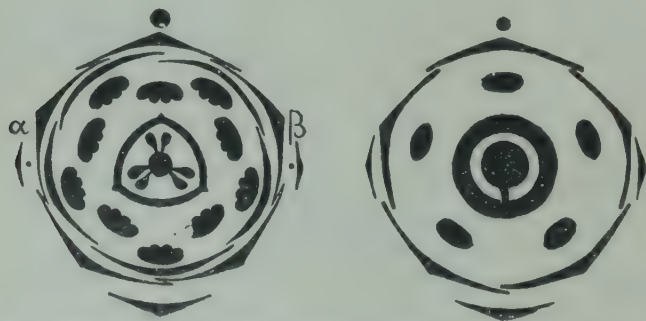
Caryocar Linn. Caryocaraceae. 10 sp. trop. Am. The wood is very durable and is used in ship-building. The fruit is a large 4-seeded drupe: the seeds are the Souari- or Butter-nuts of commerce.

Caryocaraceae (*Rhizoboleae*) (*EP.*; *Ternstroemiaceae* p.p. *BH.*). Dicots (Archichl. Parietales). 2 gen., 15 sp. trop. Am. Trees and shrubs with ternate opp. or alt. l. with deciduous stips. Fls. ♂ in racemes. K (5—6), C (5—6), A ∞ , united into a ring or in 5 bundles. $\underline{G}$ 4- or 8—20-loc. with as many styles. 1 ov. in each loc. Usu. drupe with oily mesocarp, and woody endocarp which splits into 4 mericarps; sometimes a leathery schizocarp. Little or no endosp. *Genera*: Anthodiscus. Caryocar.

Caryodendron Karst. Euphorbiaceae (A. II. 2). 2 trop. S. Am.

Caryophyllaceae (*EP.*; *BH.* excl. *Illecebraceae* or *Paronychiaceae*, and *Scleranthaceae*). Dicots. (Archichl. Centrospermae). 60 gen., 1300 sp. cosmop. (many Brit.), mostly herbs, a few undershrubs, with opp. simple usu. entire l., often stip.; the stem often swollen at the nodes, the branching dich. The infl. usu. term. the main axis and is typically a dich. cyme, but both in the veg. region and in the infl., of the two branches arising at any node, one (that in the axil of β) tends to outgrow the other and after two or three branchings the weaker one often does not develop at all, so that a cincinnus arises. The whole infl. is very char., and such an one is often called a caryophyllaceous infl.

Fls. ♂ and reg., but often not isomerous. As a type, the formula of *Lychnis* may serve: K (5), C 5, A 5+5, $\underline{G}$ (5), with free central plac., uniloc. Ov. usu. ∞ , in double rows corresponding to the



Floral diagrams of (1) *Silene inflata* and (2) *Paronychia* sp. (after Eichler), showing the ordinary type of fl. in Silenoideae and the most reduced type of Alsinoideae; α , β =bracteoles.

cpls., rarely few or 1 (*Paronychieae*), usu. campylotropous. In most cases the fl. is obdiplost. as may be recognised by the cpls. (when 5) being opp. the petals. Frequently, reduction of the number of parts occurs, e.g. $\underline{G}$ (3) or (2) or rarely (4); A 4+4, or 5, 3, 2, or 1, and in other cases the C may abort (*Sagina* sp., *Herniaria*, &c.). The ovary, sta., and corolla are sometimes borne on an androphore

(*e.g.* *Lychnis*), an elongation of the axis between K and C. The petals sometimes have a ligule (*e.g.* *Lychnis*), and are often bifid. At the base of the ovary are often seen traces of the septa, which in the upper part do not develope; in some cases the plac. is basal.

Biologically, as well as morphologically, the fam. forms two distinct groups, a higher type, the *Silenoideae*, and a lower, the *Alsinoideae*. All secrete honey at the base of the sta., but while in the A. the fl. is wide open, so that short-tongued insects can reach the honey, in the S. a tube is formed by the gamosepalous K; in this stand the claws of the petals and the sta., partly filling it up, and rendering the honey inaccessible to any but long-tongued insects, esp. bees and Lepidoptera. The latter class, esp. in the Alps (see Müller's *Alpenblumen*), are the chief visitors and many of the S. are adapted to them—by length of tube, red and white colours, night-flowering in many sp., or emission of scent only at night, &c. The fls. are commonly proandr. Many A. are gynodioec. (cf. Labiatae).

Fr. usu. a caps. containing several or ∞ seeds. It opens in nearly all cases by splitting from the apex into teeth which bend outwards, leaving an opening. The splitting may take place in as many, or in twice as many, lines as cpls. The seeds cannot escape from the capsule unless it be shaken, *e.g.* by wind or animals, and being small and light have a good chance of distr. Embryo usu. curved round the perisperm (in a few cases nearly straight).

Classification and chief genera (after Pax):

I. *ALSINOIDEAE* (fl. polysepalous; sta. often perig.).

a. Fruit a capsule opening by teeth.

1. *Alsineae* (styles free to base; l. exstip.): *Stellaria*, *Cerastium*, *Sagina*, *Arenaria*.

2. *Sperguleae* (do., but l. stip.): *Spergula*, *Spergularia*.

3. *Polycarpeae* (styles joined at base): *Drymaria*, *Polycarpon*.

b. Fruit an achene or nut.

4. *Paronychieae* (fls. all alike; stipules): *Corrigiola*, *Paronychia*, *Illecebrum*, *Herniaria*.

5. *Dysphanieae* (do., but l. exstip. alt.): *Dysphania*.

6. *Scleranthae* (do., exstip. opp): *Scleranthus*.

7. *Pteranthae* (fls. in 3's, the 2 lat. $\pm$ abortive): *Pteranthus*.

II. *SILENOIDEAE* (fl. gamosepalous, hypog.):

1. *Lychnideae* (calyx with commissural ribs): *Silene*, *Lychnis*.

2. *Diantheae* (no commissural ribs): *Gypsophila*, *Dianthus*.

BH. separate off groups 1, 4—7 as an independent fam. *Illecebraceae* (Monochlam. Curvembryae), retaining the rest (*Caryophylleae*) in Polypetalae Caryophyllinae. This is an unnatural separation of closely allied groups. See discussion of relationships of these fams. in *Nat. Pfl.* (*Caryophyllaceae*, p. 68).

Caryophyllata Tourn. = Geum Tourn. (Rosac.).

Caryophyllatus (Lat.), with long claw.

Caryophylleae (BH.). See above.

Caryophyllinae (BH.). The 4th cohort of Polypetalae.

Caryophyllus L = *Eugenia* L. (BH.) = *Jambosa* DC p.p. (Myrt.).

Caryopitys Small (*Pinus* p.p.). Pinaceae. 2 N. Am.

Caryopsis, achene with pericarp and testa united, *Gramineae*.

Caryopteris Bunge. *Verbenaceae* (5). 5 Himal. to Japan.

Caryospermum Blume (*Perrottetia* p.p. *EP.*). *Celast.* 3 Indomal.

Caryota L. *Palmae* (iv. 1). 10 Indomal. Stem columnar; l. bipinnate. Infl. of a number of equal branches hanging down like a brush. They appear in descending order, the oldest in the crown, the younger lower down in the axils of the old leaf-sheaths. Fls. in groups of 3, one ♀ between two ♂. Sta. 9—∞. Cpl. 1. Berry.
C. urens L. (toddy palm) cult.; it yields palm sugar (see Arenga), sago (see Metroxylon), Kitul fibre, wood, &c.

Casasia A. Rich. *Rubiaceae* (I. 8). 5 W.I.

Cascara sagrada, *Rhamnus Purshiana* DC.

Cascarilla Wedd. (*Ladenbergia* p.p. *EP.*). *Rubiaceae* (I. 4). 20 S. Am.
The bark of some resembles that of *Cinchona* (see also *Croton*), but the amount of alkaloid is small.

Cascarilla bark, *Croton Cascarilla* Benn., *Cascarilla*.

Casconia Griseb. *Leguminosae* (III. 6). 1 Argentina.

Casearia Jacq. *Flacourtiaceae* (7) (*Samydaceae* *BH.*). 150 trop.
C. praecox Griseb. (Cuba, trop. S. Am.), W.I. box (useful wood).

Caseola Nor. Inc. sed. Nomen.

Cashaw (W.I.), *Prosopis*.

Cashew nut, *Anacardium occidentale* L.

Casimirella Hassler. *Icacinaeae*. 1 Paraguay.

Casimiroa La Llave. *Rutaceae* (iv). 5 Cent. Am. Ed. fr.

Casparya Klotzsch = *Begonia* L. p.p. (*Begon.*).

Cassandra D. Don (*Lyonia* p.p. *EP.*). *Ericac.* (II. 1). 1 N. temp.

Cassareep, *Manihot*.

Cassava, *Manihot*.

Cassebeera Kaulf. = *Cheilanthes*, *Pellaea*, &c. (*Polypod.*).

Cassebeeria Dennst. (*Sonerila* Roxb.). *Melast.* (1). 60 warm As.

Casselia Nees et Mart. *Verbenaceae* (I). 6 Brazil, Paraguay.

Cassia Tourn. ex L. *Leguminosae* (II. 5). 400 trop. and warm temp. (exc. Eur.). Trees, shrubs and herbs with paripinnate l. and stips. of various types. Fl. ♂, but with petals almost equal in size. The sta. may be 10, but the 3 upper ones are usu. reduced to stds. or absent. The anthers usu. open by pores. The 5 upper sta. are generally short, the 2 lower are long and project outwards. In many two forms of fl. occur, one in which the lower sta. project to the left, the other in which they project to the right. It was once thought that this *enantiostylis* was a kind of heterostylism, but both types of fl. occur on one plant. It would appear to be simply a case of variation in symmetry (*cf.* *Exacum*, *Saintpaulia*). In many sp. a division of labour takes place among the sta. (*cf.* *Heeria*); the insect visitors eat the pollen of the short sta. and carry away on their bodies that of the long. There is no honey. Fr. often chambered up by 'false' septa running across it—outgrowths from the placenta.

Many cult. for the l., which when dried form the drug senna. Alexandrian senna from *C. acutifolia* Delile, Italian *C. obovata* Collad., Arabian *C. angustifolia* Vahl. *C. Fistula* L. (purging Cassia, pudding-pipe tree) has its seeds embedded in laxative pulp.
Cassia bark, *Cinnamomum Cassia* Blume; -broom, *Cassia*.

- Cassida** Tourn. ex Adans. = *Scutellaria* Riv. (Labiata.).
- Cassidispermum** Hemsl. Sapotaceae. 1 Solomon Is.
- Cassie flowers**, *Acacia Farnesiana* Willd.
- Cassine** L. Celastraceae. 40 S. Afr., Madag. *C. crocea* Presl yields saffron-wood.
- Cassinia** R. Br. Compositae (4). 20 S. Afr., Austr., N.Z.
- Cassinopsis** Sond. Icacinaceae (Olacin. *BH.*). 4 S. Afr., Madag.
- Cassiope** D. Don. Eric. (II. 1). 7 boreal. L. much rolled back (see fam.; cf. *Empetrum*); in *C. Redowskii* G. Don it is hollow.
- Cassipourea** Aubl. Rhizophoraceae. 10 trop. Am.
- Cassupa** Humb. et Bonpl. Rubiaceae (I. 7). 2 N.W. S. Am.
- Cassytha** L. Lauraceae (II). 15 palaeotrop. Parasites with the habit of *Cuscuta*.
- Castalia** Salisb. = *Nymphaea* L. p.p. (*C. speciosa* Salisb. = *N. alba*).
- Castanea** Tourn. ex L. (incl. *Castanopsis* Spach). Fagaceae. 30*.
C. vulgaris Lam. (*sativa* Mill.) is the chestnut. The ♂ fls. are in dich. of 3—7, the ♀ in groups of 3, yielding 3 nuts, enclosed in the prickly cupule (cf. others of fam. and *Aesculus*). Fr. ed.; useful wood and bark (used in tanning). See fam. for fl. diagram.
- Castanella** Spruce (*Paullinia* p.p. *EP.*). Sapind. (I). 1 Brazil.
- Castaneous**, chestnut-coloured.
- Castanopsis** Spach (*Castanea* p.p. *EP.*). Fagaceae. 25 trop. As.
- Castanospermum** A. Cunn. Leguminosae (III. 1). 1 sub-trop. Austr.,
C. australe A. Cunn. (Australian chestnut), has ed. seeds.
- Castanospora** F. Muell. Sapindaceae (I). 1 warm E. Austr.
- Castela** Turp. Simarubaceae. 12 C. and S. Am., W.I.
- Castelaria** Small. Simarubaceae. 8 W.I. to California.
- Castelnavia** Tul. et Wedd. Podostemaceae. 7 Brazil.
- Castilleja** Mutis. Scrophulariaceae (III. 3). 31 N. Am., As., S. Am. (painted lady, paint-brush) The upper l., or sometimes only their outer ends, are brightly coloured, adding to the conspicuousness of the fls. (cf. *Cornus*, *Poinsettia*, &c.).
- Castilloa** Cervant. Moraceae (II). 3 trop. Am., Cuba. The latex of *C. elastica* Cerv. yields caoutchouc (C. American or Panama rubber, Caucho, Ulé; cf. *Hevea*, &c.).
- Castor oil**, *Ricinus communis* L.
- Castratella** Naud. Metastomaceae (I). 1 Colombia.
- Casual**, an occasional weed of cultivation, not naturalised.
- Casuarina** Linn. Casuarinaceae. 35 Austr., Polynes., &c. Trees, often of weeping habit, with long slender green branches, cylindrical and deeply grooved. At the nodes are borne whorls of scale l. like those of *Equisetum*. The stomata and green tissue are at the bases of the grooves, whilst the ridges are formed of sclerenchyma, so that the plant is markedly xero. Fls. unisex. The ♂ are borne in term. spikes on short lat. branches. The internodes are short and at every node is a cup (formed of the combined bracts) with several sta. hanging out over the edge. Each repres. a ♂ fl. and has a 2-leaved P and 2 bracteoles. The ♀ fls. are borne in dense spherical heads. Each is naked in the axil of a bract, has 2 bracteoles, and consists of 2 cpls., synep., the post. loc. empty, the ant. containing 2 or more ov. The long styles hang out beyond the bracts and wind-fert

occurs. Afterwards the whole head becomes woody (bracts as well) enclosing the ripening seeds. The seed is winged and is enclosed in the woody bracteoles. The wood (beef-wood) is valued for its hardness; several sp. are used, known in Austr. as she-oak, forest-oak, &c. The green shoots are used as fodder for cattle.

Casuarinaceae (EP., BH.). Dicots. (Archichl. Verticil.; Unisexuales BH.). Only genus *Casuarina* (q.v.). The place to be assigned to this fam. in the natural system has been much disputed. Its nearest allies seem to be *Betulaceae*. In 1891 Treub discovered the chalazogamic fert. (cf. *Chalazogamæ*) and proposed to remove it from its place near the B. Later discoveries however show that these pl. too are chalazogamic, as also *Juglans*, and thus C. may still be kept beside them.

Casuarineae (BH.) = preceding.

Casuarinifloræ (Warming). The 2nd cohort of Choripetalæ.

Cat-brier (Am.), *Smilax*; -**claw** (W.I.), *Bignonia Unguis-cati* L.; -**mint**, -**nip**, *Nepeta Cataria* L.; -'s **ear**, *Hypochaeris*; -'s **foot**, *Antennaria*; -'s **tail**, *Typha*.

Catabrosa Beauv. G amineæ (10). 7 temp. (1 Brit.).

Catalpa Scop. Bignoniaceæ (2). 10 Am., E. As. *C. bignonioides* Walt. (cult. orn. tree) yields a durable timber.

Catamixis Thoms. Compositæ (12). 1 Himal.

Catananche L. Compositæ (13). 5 Medit.

Catanthera F. Muell. Ericaceæ (111. 1). 1 New Guinea.

Cataphyllary leaves, scales.

Catapodium Link. (*Festuca* p.p. BH.). Gramin. (10). 2 Medit.

Catappa Gaertn. = *Terminalia* L. p.p. (Combret.).

Catasetum Rich. Orchidaceæ (II. 11). 40 trop. Am. Epiph. 3 widely different forms occur on different (or sometimes on the same) stocks. Long regarded as separate gen., it is now known that they are all forms of C. The old genus C. is the ♂ form, *Myanthus* Lindl. the ♀ and *Monachanthus* Lindl. the ♀. The labellum is uppermost in the fl. The pollinia are ejected with violence when one of the horns of the column is touched. (Darwin's *Orchids*, p. 178; Rolfe in *Linn. Soc. Journ.*, 27, 1890.)

Catch-fly, *Lychnis*, *Silene*.

Catechu, *Acacia Catechu* Willd.

Catesbaea L. Rubiaceæ (1. 8). 10 W. Ind.

Catha Forsk. Celastraceæ. 1 Arabia, Afr., *C. edulis* Forsk. The l. are used by Arabs like tea, under the name *Khat* or *Cafta*.

Catha G. Don = *Celastrus* L. (Celastr.).

Cathartolinum Reichb. (*Linum* p.p.). Linaceæ. 50 N. Am.

Cathastrum Turcz. (*Pleurostyliæ* EP.). Celastr. 1 S. Afr.

Cathcartia Hook. f. Papaveraceæ (11). 2 Himal., China.

Cathedra Miers. Olacaceæ. 5 Brazil.

Cathestecum J. Presl. Gramineæ (10). 2 Mex., Texas.

Catis O. F. Cook (*Euterpe* p.p. EP.). Palmae (IV. 1). 1 Brazil.

Catjang, dhal, *Cajanus indicus* Spreng.

Catkin, a pendulous spike, *Betulaceæ*, *Fagaceæ*, *Salicaceæ*.

Catoblastus H. Wendl. Palmae (IV. 1). 3 trop. S. Am.

Catocoryne Hook. f. Melastomaceæ (1). 1 Peru.

Catonia P. Br. Inc. sed. 1 Jamaica.
Catonia Raf. Inc. sed. 1 habitat?
Catonia Vell. Inc. sed. 1 Brazil.
Catopheria Benth. Labiatae (VIII). 3 trop. Am.
Catophractes D. Don. Bignoniaceae (2). 1 trop. Afr.
Catopsis Griseb. Bromeliaceae (1). 15 W.I., Mex., Andes.
Catosperma Benth. Goodeniaceae. 1 trop. Austr.
Catostemma Benth. Bombacaceae. 1 Guiana.
Cattleya Lindl. Orchidaceae (II. 6). 30 trop. Am., largely cult.; showy fls. The labellum encloses the column but is not united to it. From its base a nectary runs down into the ovary. The action of the parts of the fl. is like that of *Epipactis* (Darwin, *Orchids*, p. 143).
Cattleyopsis Lem. (*Laelia* p.p. *EP.*). Orchid. (II. 6). 2 W.I.
Catutsjeron Adans. (*Holigarna* Buch.-Ham.). Anacardiaceae (4). 5 Indomal.
Caucalis L. (incl. *Torilis* Adans.). Umbelliferae (III. 2). 8 N. temp., 5 Brit. (hedge-parsley, &c.).
Caucanthus Forsk. Malpighiaceae (1). 3 E. Afr., Arabia.
Cauda, a tail-like appendage; **-tus** (Lat.), tailed.
Caudex, a trunk or stock.
Caudicle, cf. *Orchidaceae*.
Caul- (Lat. pref.), stem; **-escens** (Lat.), with obvious stem; **-icle**, a diminutive stalk; **-iflory**, production of fl. from old stems, *Artocarpus*, *Averrhoa*, *Clavijsa*, *Crescentia*, *Cynometra*, *Ficus*, *Goethea*, *Kigelia*, *Theobroma*, *Theophrasta*; **-ine**, on the stem; **-caulis** (Lat. suff.), -stemmed; **-ocarpic**, fruiting repeatedly; **-ome**, organ of stem nature.
Caulanthus S. Wats. Cruciferae (1). 8 W. U.S. *C. procerus* Wats. (wild cabbage) ed.
Cauliflower, *Brassica oleracea* L. var.
Caulinia DC. = *Posidonia* Koen. p.p.; **do.** Willd. = *Naias* L. p.p.
Caulophyllum Michx. (*Leontice* p.p. *EP.*). Berb. 2 N.E. As., N. Am. (cohosh).
Caustis R. Br. Cyperaceae (II). 7 Austr.
Cautleya Royle (*Roscoea* p.p. *BH.*). Zingib. (1). 3 Himal.
Cavaleriea Leveillé. Hamamelidaceae. 1 China.
Cavanillesia Ruiz et Pav. Bombacaceae. 2 S. Am.
Cavendishia Lindl. Ericaceae (III. 2). 30 trop. Am.
Cayaponia Silva Manso. Cucurbitaceae (3). 70 warm Am., Afr.
Cayenne pepper, *Capsicum annuum* L.
Cayusea A. St Hil. Resedaceae. 2 E. Afr. to India.
Ceanothus L. Rhamnaceae. 40 Am., often cult. orn. shrubs.
Ceara rubber, *Manihot Glaziovii* Muell.-Arg.
Cebu hemp, Manila hemp, *Musa textilis* Née.
Cecropia L. Moraceae (III). 45 trop. Am. Trees of rapid growth, with very light wood, used for floats, &c. Infl. a very complex cyme (see *Bot. Centr.* 57, p. 6). *C. peltata* L. is the trumpet tree, so called from the use made of its hollow stems by the Uaupès Indians (Wallace, *Amaz.* ch. XII). The hollows are often inhabited by fierce ants (*Azteca* sp.) which rush out if the tree be shaken, and attack the intruder. Schimper has made an investigation of this *symbiosis* (or

living together for mutual benefit) of plant and animal, showing that there is here a true case of myrmecophily as in *Acacia sphaerocephala* (q.v.). These ants protect the C. from the leaf-cutter ants. The internodes are hollow but do not communicate directly with the air. Near the top of each however is a thin place in the wall. A gravid ♀ ant burrows through this and brings up her brood inside the stem. The base of the leaf-stalk is swollen and bears food bodies (cf. *Acacia*) on the lower side, upon which the ants feed. New ones form as the old are eaten. Several other sp. show similar features. An interesting point, that goes to show the adaptive nature of these phenomena, is that in one sp. the stem is covered with wax which prevents the leaf-cutters from climbing up, and there are neither food-bodies nor the thin places in the internodes.

Cedar, *Cedrela*, *Cedrus*, *Toona*, &c.; **Atlantic**, *Cedrus atlantica* Manetti; **Australian red-**, *Toona*; **bastard-**, *Chickrassia* (W.I.); *Guazuma tomentosa* H. B. K.; **Bermuda-**, *Juniperus bermudiana* L.; **Japanese-**, *Cryptomeria*; **of Lebanon**, *Cedrus*; **Oregon-**, *Cupressus Lawsoniana* A. Murr.; **pencil-**, *Juniperus*; **red-**, *Juniperus*; **Siberian-**, *Pinus Cembra* L.; **W. Indian-**, *Cedrela*; **white-**, *Chamaecyparis*, *Chickrassia*, *Libocedrus*; **yellow-**, *Chamaecyparis*; **-wood**, *Toona*.

Cedrela P. Br. (BH. incl *Toona*, q.v.). Meliaceae. 100 trop. Am. Many yield valuable timber, e.g. *C. odorata* L., the West Indian Cedar, used in cigar-boxes.

Cedrelopsis Baill. Meliaceae (I). 2 Madag.

Cedronella Riv. Labiatae (VI). 1 Canaries, Madeira.

Cedrus (Tourn.) Mill. Coniferae (Pinaceae; see C. for gen. char.). 3, *C. Libani* Barrel. (Cedar of Lebanon), *C. atlantica* Manetti (Atlantic Cedar; Algeria) and *C. Deodara* Loud. (Deodar; Himal., gregarious, and reaching to 40 ft. in girth); all probably vars. of one sp. Handsome evergreen trees (often planted for orn.) with needle l. and long and short shoots; the latter may grow for several years and even develop into long shoots. Fls. sol., in the position of short shoots. The cone ripens in 2—3 years. Wood durable and valued for building, &c.

Celba Gaertn. (*Bombax* L. p.p.; *Eriodendron* DC. EP.). Bombac. 10 trop. Am. *C. pentandra* Gaertn. is the silk-cotton (cf. *Eriodendron*).

Celandine, *Ranunculus Ficaria* L.; **greater-**, *Chelidonium majus* L.; **W. Indian**, *Bocconia*.

Celastraceae (EP., BH.). Dicots. (Archichl. Sapindales; Celastrales BH.). 38 gen. with 280 sp., trop. and temp. Trees or shrubs with simple, often leathery, l. and cymose (rarely racemose) infl. Fl. small, reg., usu. ♂. K 4—5, free or united, C 4—5. There is usu. a well marked disc, on the upper side or edge of which are borne 4—5 sta. G (2—5), usu. with as many loculi, sometimes partly sunk in the disc. Ovules generally 2 in each loc., usu. erect, anatropous or apotropous. Fr. a loculic. caps., samara, drupe, berry or indeh. caps. Seed usu. with brightly coloured aril. Endosp. usu. present. *Chief genera*: Euonymus, Celastrus, Cassine.

Celastrales (BH.). The 9th cohort of Polypetalae.

Celastrineae (BH.) = Celastraceae.

- Celastrus** L. Celastraceae. 30 trop. and subtrop. Climbing shrubs with fruit like *Euonymus*.
- Celebnia** Nor. Inc. sed. Nomen.
- Celeriac**, *Apium graveolens* L. var. *rapaceum*.
- Celery**, *Apium graveolens* L.; -pine, *Phyllocladus*.
- Cellulose**, the carbohydrate of which cell walls are composed.
- Celmisia** Cass. Compositae (3). 27 N.Z., Austr., &c.
- Celome** Greene (*Cleome* L. p.p.). Capparid. (v). 1 N. Am.
- Celosia** L. Amarantaceae (1). 35 trop. and temp., most interesting *C. cristata* L., the cock's-comb, a cult. (but now hereditary) monstrosity, in which fasciation of the fls. of the infl. occurs.
- Celsa** Vell. Zygophyllaceae. 1 Brazil.
- Celsia** L. Scrophulariaceae (1. 1). 40 Medit., Afr., As.
- Celtidaceae** = *Ulmaceae* p.p.
- Celtis** Tourn. *Ulmaceae*. 75 *. Like *Ulmus*, but with intr. anthers, drupe, and curved embryo. Fr. of nettle-tree (*C. australis* L.) ed.; wood useful for turning; tree used as fodder in India.
- Cenarrhenes** Labill. Proteaceae (1). 1 Tasmania.
- Cenchropsis** Nash (*Cenchrus* p.p.). Gram. (5). 1 N. Am.
- Cenchrus** L. Gramineae (5). 15 trop. and warm temp. Spikelet surrounded by invol. of sterile spikelets, which in some sp. become hard and prickly, surrounding the fr. and acting as a means of distribution by animals (*cf.* *Tribulus*, &c.). *C. tribuloides* L. is a very troublesome pest in the wool-growing districts of N. Am.
- Cenia** Comm. ex Juss. (*Cotula* p.p. *EP.*). Compositae (7). 9 S. Afr.
- Cenocentrum** Gagnep. Malvaceae. 1 Indochina.
- Cenolophium** Koch (*Selinum* p.p. *BH.*). Umbel. (III. 5). 1 Eur., As.
- Cenostigma** Tul. Leguminosae (II. 8). 3 Brazil, Paraguay.
- Censer-mechanism**, *Aconitum*, and *cf.* Seed-dispersal.
- Centaurea** L. Compositae (11). 600 cosmop., chiefly Medit.; several Brit. *e.g.* *C. nigra* L. (knapweed), *C. Scabiosa* L., *C. Cyanus* L. (blue-bottle or cornflower). In the last two the outer fls. are neuter with enlarged C (*cf.* *Hydrangea*). *C. Calcitrapa* L. (star-thistle) has long spiny invol. br. The fl. of *C.* shows the usual construction but the sta. are sensitive to contact and when touched (*e.g.* by insects probing) contract, thus forcing out the pollen at the top of tube. In *C. montana* L. and others there is a nectary on each br. of the invol. Numbers of ants are thus attracted.
- Centaurium** Gilib. (*Erythraea* Borkh.). Gent. (1). 30 N. Am.
- Centaurodendron** Johow. Compositae (11). 1 Juan Fernandez.
- Centauropsis** Boj. Compositae (1). 3 Madagascar.
- Centaury**, *Erythraea Centaurium* Pers.
- Centella** L. (*Hydrocotyle* p.p. *BH.*). Umbel. (I. 1). 20 S. Afr. to As.
- Centema** Hook. f. Amarantaceae (2). 5 trop. Afr.
- Centemopsis** Schinz. Amarantaceae (2). 3 S. and trop. Afr.
- Centipeda** Lour. Compositae (7). 5 Chili, Madag., trop. As., Austr.
- Centothea** Desv. Gramineae (10). 3 trop. As., Afr.
- Centradenia** G. Don. Melastomaceae (1). 4 Mexico, Cent. Am. *C. rosea* Lindl. shows habitual anisophylly.
- Centradeniastrum** Cogn. Melastomaceae (1). 1 Peru.
- Centranthera** R. Br. Scrophular. (III. 2). 5 trop. As., China, Austr.

- Centrantheropsis** Bonati. Scrophular. (III. 2). 1 China.
- Centranthus** DC. Valerianaceae. 12 Medit., Eur. *C. ruber* DC. (red spur-valerian) cult. orn. C spurred at the base; at the end of the spur honey is secreted. The tube of the C has a partition dividing it into two, one containing the style, the other, lined with downward-pointing hairs, leading to the spur. Fl. protandr.; only long-tongued insects can obtain honey.
- Centratherum** Cass. Compositae (1). 15 trop.
- Centric** (1.), circular in section, with tissues distr. evenly all round, *Allium*, *Bobartia*, *Eleocharis*, *Juncus*, *Littorella*.
- Centrifugal**, away from centre; **-petal**, towards centre.
- Centrilla** Lindau. Acanthaceae (IV. B). 1 Cuba.
- Centrocarcha** D. Don = *Rudbeckia* L. p.p. (Compos.).
- Centroglossa** Barb. Rodr. (*Zygostates* Lindl. *EP.*). Orchidaceae (II. 19) 5 Brazil, Paraguay.
- Centrolepidaceae** (*EP.*, *BH.*). Monocotyledons (Farinosae; Glumaceae *BH.*). 6 gen., 32 sp. Austr., N.Z., S. Am., Polynes., S.E. As. Small grass-like herbs with spikes of small fls., ♂ or unisex., naked or with 1—3 hair-structures round them. A 1—2, G 1—∞, each with one pend. orthotr. ov. *Chief genus*: *Centrolepis*.
- Centrolepis** Labill. Centrolepidaceae. 20 Austr., E. As.
- Centrolobium** Mart. Leguminosae (III. 7). 3 trop. Am. Pod winged. *C. robustum* Mart. yields good timber (zebra wood).
- Centromadia** Greene (*Hemizonia* p.p.). Compos. (5). 5 Calif.
- Centronia** D. Don. Melastomaceae (I). 15 trop. Am.
- Centropetalum** Lindl. Orchidaceae (II. 20). 4 Andes.
- Centropacus** Pierre. Euphorbiaceae (A. I. 1). 1 trop. Afr.
- Centropogon** Presl. Campanulaceae (III). 90 trop. Am., W.I.
- Centrosema** Benth. (*Bradburya EP.*). Legum. (III. 10). 30 Am.
- Centrospermae**. The 17th order of Dicots. (Archichl.).
- Centrostegia** A. Gray. Polygonaceae (I. 1). 2 California.
- Centrostigma** Schlechter. Orchid. (II. 1). 3 Nyassaland.
- Centunculus** Dill. ex L. Primul. 3 temp. and subtrop., 1 Brit.
- Century**, set of 100 dried plants.
- Century plant**, *Agave americana* L.
- Cepa** (Tourn.) L. = *Allium* Tourn. (Lili.).
- Cephaelis** Sw. (*Uragoga* L. *EP.*). Rubiaceae (II. 5). 130 trop., esp. Brazil. For ipecacuanha cf. *Uragoga*.
- Cephal-** (Gr. pref.), head.
- Cephalacanthus** Lindau. Acanthaceae (IV. B). 1 Peru.
- Cephalandra** Schrad. = *Coccinia* Wight et Arn. (Cucurb.).
- Cephalanthera** Rich. Orchidaceae (II. 2). 10 N. temp., 3 Brit. No rostellum; the pollen germinates *in situ*, fertilising its own stigma (Darwin, *Orchids*, p. 80). The lat. stds. (see fam.) are easily seen. Darwin regards C. as a degraded *Epipactis* (cf. *Cephalopipactis*).
- Cephalanthus** L. Rubiaceae (I. 6). 8 warm countries.
- Cephalaralia** Harms. Araliaceae (2). 1 Austr.
- Cephalaria** Schrad. Dipsacaceae. 35 Medit., Afr.
- Cephalipterum** A. Gray. Compositae (4). 1 S. and W. Austr.
- Cephalobembix** Rydberg. Compositae (6). 1 Mexico.
- Cephalocarpus** Nees. Cyper. (II). 1 Brazil. Habit of *Dracaena*.

- Cephalocereus** Pfeiff. (em. K. Schum.; *Cereus* Mill. p.p. *BH.*).
Cactaceae (III. 1). 24 Brazil, Mexico.
- Cephalocroton** Hochst. Euphorb. (A. II. 4). 6 trop. Afr., Madag.
- Cephalocrotonopsis** Pax (preceding, p.p.). Euph. (A. II. 4). 1 Socotra.
- Cephalomappa** Baill. Euphorbiaceae (A. II. 2). 1 Borneo.
- Cephalomedinilla** Merrill. Melastomaceae (I). 1 Phil. Is.
- Cephalonema** K. Schum. Tiliaceae. 1 trop. Afr.
- Cephalopappus** Nees et Mart. Compositae (12). 1 Bahia.
- Cephalophilum** Börner (*Polygonum* p.p.). Polyg. (II. 2). 1 N. Am., N. As.
- Cephalophora** Cav. (*Helenium* p.p. *EP.*). Compos. (6). 12 temp. S. Am.
- Cephalopipactis** × Aschers. et Graebn. Orchid. Hybrid between *Cephalanthera* and *Epipactis*.
- Cephalosphaera** Warb. (*Brochoneura* p.p.). Myristic. 1 trop. Afr.
- Cephalostachyum** Munro. Gramineae (13). 8 Indomal., Madag.
- Cephalostemon** R. Schomb. Rapateaceae. 1 Brazil, Guiana.
- Cephalostigma** A. DC. Campanulaceae (I). 7 trop.
- Cephalotaceae** (*EP.*; *Saxifragaceae* p.p. *BH.*). Dicots. (Archichl. Rosales). Only genus *Cephalotus* (*q.v.*).
- Cephalotaxus** Sieb. et Zucc. Coniferae (Taxaceae; see *C.* for gen. char.). *C. Fortunei* Hook. cult. orn. shrub. All shoots of unlimited growth. Fls. dioec., the ♂ in heads in the axils of the l. of the preceding year, the ♀ stalked, of several pairs of l. each with a short axillary shoot bearing two ov. Seeds 1—2, with fleshy aril.
- Cephalotomandra** Karst. et Triana (*Pisonia* L. p.p. *EP.*). Nyctaginaceae. 1 Colombia.
- Cephalotus** Labill. *Cephalot.* 1 in marshes at King George's Sound, W. Austr. *C. follicularis* Labill. An interesting pl. with pitchers like *Nepenthes* or *Sarracenia*, though not nearly related to either. The lower l. of the rosette form pitchers, the upper are flat and green (*cf.* this division of labour with that in N. and S.), the rhiz. annually producing both. The pitcher has much the structure of N. and catches insects in the same way. Fl. ♀, apetalous, reg.; P 6, valvate; A 6+6; G 6, or ± united, each with 1 (rarely 2) basal erect anatropous ov. with dorsal raphe. Follicle with 1 seed; embryo small in fleshy endosp.
- Ceramanthus** Malme (*Sarcostemma* p.p.). Ascl. (II. 1). 2 S. Am.
- Ceranthera** Ellis. Labiatae (VI). 2 S.E. U.S.
- Ceraria** Pearson et E. L. Stephens. Portulac. 3 S. Afr.
- Cerasee** (W.I.), *Momordica*.
- Cerasin**, an insoluble constituent of gums, merely swelling in water; *Prunus*.
- Cerasiocarpum** Hook. f. Cucurbit. (2). 1 Malay Arch., Ceylon.
- Cerastium** (Dill.) L. (incl. *Moenchia* Ehrh.). Caryophyllaceae (I. 1). 100 N. temp., 5 or more Brit. (mouse-ear chickweed).
- Cerasus** (Tourn.) L. = *Prunus* L. *C. Avium* Moench., *Laurocerasus* Loisel., *lusitanicus* Loisel., *Padus* Delarb. = *P. Avium*, &c.; *C. vulgaris* Mill. = *P. Cerasus*.
- Cerat-** (Gr. pref.), horn.
- Ceratandra** Eckl. Orchidaceae (II. 1). 9 S. Afr.
- Ceratandropsis** Rolfe. Orchidaceae (II. 1). 1 S.W. Cape Col.

- Ceratiola** Michx. Empetraceae. 1 Atl. N. Am.
Ceratosicyos Nees. Achariaceae. 1 S. Afr.
Ceratites Soland. ex Miers. Apocyn. (1. 3). 1 Rio de Janeiro.
Ceratocarpus Buxb. ex L. Chenopod. (A). 1 Persia, Afghan.
Ceratocaryum Nees (*Willdenowia* EP.). Restiaceae. 10 S. Afr.
Ceratocephalus Moench. = *Ranunculus* L. p.p. (Ranunc.).
Ceratochaete Lunell (*Zizania* p.p.). Gramin. (6). 1 N. Am.
Ceratochilus Blume. Orchidaceae (II. 20). 4 Indomal.
Ceratochloa Beauv. = *Bromus* Dill. p.p. (Gram.).
Ceratocnemum Coss. et Balansa (*Rapistrum* p.p. EP.). Cruciferae (2).
 1 Morocco.
Ceratodiscus Batalin (*Corallo-discus* p.p. EP.). Gesn. (1). 1 Chi.
Ceratogyne Turcz. Compositae (7). 1 W. temp. Austr.
Ceratolacis Wedd. Podostemaceae. 1 Brazil.
Ceratolobus Blume. Palmae (III. 2). 2 Malay Arch.
Ceratominthe Briq. Labiatae (VI). 2 Andes.
Ceratonia L. Leguminosae (II. 5). 1 Medit., *C. Siliqua* L. (carob-tree). The pods (Algaroba, St John's bread) are full of juicy pulp containing sugar and gum, and are used for fodder. The seeds are said to have been the original of the carats of jewellers.
Ceratopetalum Smith. Cunon. 2 E. Austr. Light timber.
Ceratophyllaceae (EP., BH.). Dicots. (Archichl. Ranales; Monochlam. BH.). Only genus *Ceratophyllum* (q.v.). As usu. with water-plants it is difficult to decide upon a position for the C. in the classification. The one free cpl. and several P leaves seem to place them in Ranales, and they are distinguished from Nymphaeaceae by the orthotr. ov., whorled l., &c. Eichler placed them in Urticinae.
Ceratophylleae (BH.) = preceding.
Ceratophyllum L. Ceratophyllaceae. 3 cosmop.; *C. demersum* L. and *C. submersum* L. Brit. (hornworts). Water-pl., rootless, with thin stems and whorls of much-divided submerged l. The pl. decays behind as it grows in front, so that veg. repr. occurs by the setting free of the branches. The old l. are translucent and horny, whence the name. Winter buds are not formed, the pl. merely sinking in autumn and rising in spring.
 Fls. monoec., axillary, sessile, with sepaloïd P. In the ♂, P about (12), hypog.; A 12—16 on convex recept., with oval non-cutinised pollen. In the ♀, P (9—10), hypog.; G 1, the midrib anterior; ovule 1, orthotr., pend. Achene crowned by the persistent style, which in *C. demersum* is hooked. Endosp. Fl. water-pollin.; the anthers break off and float up through the water (each has a sort of float at top of theca); the pollen is of the same specific gravity as water (cf. *Zostera*) and drifts about till it reaches a stigma.
Ceratopsis Lindl. = *Epipogon* S. G. Gmel. (BH.) = *Galera* Blume.
Ceratopteris Brongn. Parkeriaceae. 2 trop., subtrop. *C. thalictroides* Brongn. is aquatic. Its fronds are ed.
Ceratopyxis Hook. f. Rubiaceae (II. 3). 1 Cuba.
Ceratosanthes Burm. ex. Adans. Cucurb. (2). 10 Braz. to W.I.
Ceratosanthus Schur. = *Delphinium* Tourn. p.p. (Ranunc.).
Ceratosepalum Oliv. Tiliaceae. 1 E. trop. Afr.
Ceratostema Juss. (*Thibaudia* p.p. EP.). Eric. (III. 2). 25 S. Am.

- Ceratostigma** Bunge. Plumbaginaceae. 10 trop. Afr. to China. The total infl. is racemose, the partials dichasial.
- Ceratostylis** Blume. Orchidaceae (II. a. III). 30 Indomal., Polyn.
- Ceratotheca** Endl. Pedaliaceae. 5 trop. and S. Afr.
- Ceratozamia** Brongn. Cycadaceae. 6 Mexico.
- Ceraunia** Nor. Inc. sed. Nomen.
- Cerbera** L. (excl. *Tanghinia* Thou.). Apocyn. (I. 3). 6 Indomal., Madag. The floating fr. are familiar on the coast.
- Cerberiopsis** Vieill. Apocyn. (inc. sed.). 1 New Caled.
- Cercanthemum** Van Tiegh. = *Ouratea* Aubl. (Ochnac.).
- Cercestis** Schott. Araceae (IV). 9 W. Afr.
- Cercidiphyllaceae** (EP.; *Magnoliaceae* p.p. BH.). See Supplement.
- Cercidiphyllum** Sieb. et Zucc. Cercidiph. 2 Japan. Useful wood.
- Cercidium** Tul. Leguminosae (II. 7). 8 warm Am.
- Cercis** L. Legum. (II. 4). 5 N. temp. *C. Siliquastrum* L. (Judas-tree; Judas is said to have hanged himself on one), cult. orn. tree in Brit. The fls. appear before the l., in bunches on the older twigs, and have a very papilionaceous look, the two lower pets. enclosing the essential organs. Serial buds in the axils. Good wood.
- Cercocarpus** H. B. et K. Rosaceae (III. 3). 10 Mex. to Oregon.
- Cercopetalum** Gilg. Capparid. (II). 1 Cameroons.
- Cercophora** Miers. Lecythidaceae. 1 Amazon valley.
- Cordia** Moq. et Sesse. Caryophyllaceae (I. 3). 2 Mex.
- Cereals**, the grasses (Gramineae) yielding food to man, wheat, rice, maize, oats, barley, rye, millet, &c.
- Cereus** Mill. (BH. incl. *Cephalocereus* Pfeiff., *Echinocereus* Engelm., *Echinopsis* Zucc., *Pilocereus* Lem.). Cactaceae (III. 1). 220 Am., W. Ind. Most are erect cylindrical forms, rarely branched, with ribs or less often mammillae (see fam.). *C. giganteus* Engelm. (Texas) is the largest of the cacti: it grows to 70 ft. high and 2 ft. thick with candelabra-like branching. *C. grandiflorus* Mill. is the night-flowering cactus, whose sweetly-scented fls. open in the evening and wither before morning. Others, e.g. *C. triangularis* Mill., behave in the same way. These sp. are mostly trailing forms with adv. r. upon the stems. A number of cases of close resemblance may be found between sp. of *C.* and sp. of *Euphorbia*. Fr. of most ed., often preserved.
- Ceriferous**, wax-producing.
- Cerinth** (Tourn.) L. Boraginaceae (IV. 4). 7 Eur., Medit.
- Ceriops** Arn. Rhizophoraceae. 2 palaeotrop. coast.
- Cerium** Lour. Inc. sed. 1 China.
- Cernuus** (Lat.), nodding.
- Cerolepis** Pierre (*Camptostylus* EP.). Flac. (I). None described.
- Ceropegia** L. Asclepiadaceae (II. 3). 120 Afr., As., Austr. Erect or twining herbs or undershrubs, $\pm$ xero. Many have tuberous root-stocks, others are leafless and sometimes have fleshy *Stapelia*-like stems. The fls. form a trap like *Aristolochia Clematitis*. The C-tube widens at the base and at the top the teeth spread out, but in some they hold together at the tips, making a sort of umbrella. The tube is lined with downward pointing hairs, and small flies, attracted by the colour and smell, creep into the fl. and cannot escape till the hairs wither, when they emerge with pollinia on their proboscides.

- Ceropteris** Link. Polypodiaceae. 7 trop. Am., Afr., Borneo.
- Cerotheramnus** Tidestrom. Myricaceae. None described.
- Ceroxylon** Humb. et Bonpl. Palmae (IV. 1). 5 N. Andes. *C. andicolum* H. and B. and others yield wax (secreted on the stems), used for gramophone discs, candles, &c.
- Ceruana** Forsk. Compositae (3). 1 Egypt, trop. Afr.
- Cervantesia** Ruiz et Pav. Santalaceae. 4 Andes.
- Cervia** Rodr. Convolvulaceae (inc. sed.). 1 Spain.
- Cespedesia** Goudot. Ochnaceae. 6 trop. S. Am.
- Cestichis** Thou. (*Liparis* BH., *Stichorchis* EP.). Orchidaceae (II. 4). 40 Masc. to Japan and Polynesia.
- Cestrum** L. (*Habrothamnus* Endl.). Solanaceae (4). 150 trop. and sub-trop. Am. Some cult. orn.
- Ceterach** Lam. et DC. Polypodiaceae. 5 |*.
- Cetra** Nor. Inc. sed. Nomen.
- Cevallia** Lag. Loasaceae. 1 Mex., Texas.
- Ceylon oak**, *Schleichera trijuga* Willd.
- Chaboisseae** Fourn. Gramineae (10). 1 Mex.
- Chabraea** DC. = *Leuceria* Lag. p.p. (Compos.).
- Chadsia** Boj. Leguminosae (III. 6). 12 Madagascar.
- Chaenactis** DC. Compositae (6). 20 W. U.S.
- Chaenanthe** Lindl. (*Diadenium* BH.). Orchid. (II. 19). 1 Peru.
- Chaenocephalus** Griseb. Compositae (5). 12 W.I., S. Am.
- Chaenomeles** Lindl. = *Pyrus* L. (Rosac.).
- Chaenopleura** Rich. ex DC. = *Miconia* Ruiz et Pav. p.p.
- Chaenorhinum** Lange (*Linaria* p.p. BH.). Scroph. (II. 3). 20 Medit., W. As.
- Chaenostoma** Benth. Scrophulariaceae (II. 5). 120 Afr.
- Chaerofolium** Haller (*Anthriscus* p.p.). Umbel. (III. 2). 3 Eur., N. As.
- Chaerophyllopsis** Boissieu. Umbellif. (III. 2). 1 China.
- Chaerophyllum** L. Umbelliferae (III. 2). 36 N. temp. *C. temulum* L. Brit. (chervil).
- Chaet-** (Gr. pref.), hair.
- Chaetacanthus** Nees (*Calophanes* BH.). Acanth. (IV. A). 4 Afr.
- Chaetachne** Planch. Ulmaceae. 2 warm Afr.
- Chaetadelpha** A. Gray. Compositae (13). 1 S.W. U.S.
- Chaetanthera** Ruiz et Pav. Compositae (12). 30 Chili, Peru.
- Chaetanthus** R. Br. Restionaceae. 1 S.W. Austr.
- Chaetaria** Beauv. = *Aristida* L. p.p. (Gramin.).
- Chaetium** Nees. Gramineae (5). 2 trop. Am.
- Chaetocalyx** DC. Leguminosae (III. 7). 12 warm Am.
- Chaetocarpus** Thw. Euphorb. (A. II. 6). 5 trop.
- Chaetochlamys** Lindau. Acanthaceae (IV. B). 4 trop. S. Am.
- Chaetochloa** Scribn. = *Setaria* Beauv. (Gramin.).
- Chaetocyperus** Nees = *Eleocharis* R. Br. p.p. (Cyper.).
- Chaetogastra** DC. = *Tibouchina* Aubl. (Melast.).
- Chaetolepis** Miq. Melastomaceae (1). 12 trop. Am., W.I.
- Chaetopappa** DC. Compositae (3). 3 Mex., Texas.
- Chaetosciadium** Boiss. Umbelliferae (III. 2). 1 E. Medit.
- Chaetospermum** Swingle (*Limonia* p.p.). Rutac. (V). 1 Phil. Is.

Chaetospora R. Br. = *Schoenus* L. (Cyper.).

Chaetostachys Valet. Rubiaceae (II. 5). 1 New Guinea.

Chaetostoma DC. Melastomaceae (I). 18 mid. and S. Brazil.

Chaetosus Benth. Apocynaceae (I. 1). 1 New Guinea.

Chaeothylax Nees. Acanthaceae (IV. B). 7 S. and C. Am.

Chaetotropis Kunth. Gramineae (8). 2 Chili.

Chaeturus Link. Gramineae (8). 2 Spanish Peninsula.

Chaff-weed, *Centunculus minimus* L.

Chailletia DC. (*Dichapetalum* Thou.) Dichapet. 120 trop. Several have epiphyllous infl. (cf. *Erythrochiton*), probably arising by development like that in infl. of Solanaceae, or cushions of Cactaceae.

Chailletiaceae = *Dichapetalaceae*.

Chain-fern (Am.), *Woodwardia*.

Chalarothyrsus Lindau. Acanthaceae (IV. B). 1 Mex.

Chalaza, the base of the ovule; **-ogamic**, see *Chalazogamae*.

Chalazocarpus Hiern. Rubiaceae (I. 8). 1 Angola.

Chalazogamae. A division of Angiospermae, proposed by Treub as the outcome of his work upon *Casuarina* (*Ann. Buitenzorg*, x. 1891). The ovules are developed in a peculiar way, and in each a number of embryo-sacs (macrospores) form, many of which elongate downwards right into the base (chalaza) of the ovule. Usually only one is fertile. The pollen tube passes through the style and the ovarian tissues, never emerging from them, to the stalk of the ovule, which it enters from the chalazal end. It passes upwards inside a sterile macrospore and finally enters the fertile one and fertilises the ovum. The endosp. is formed by the free nuclei in the embryo-sac, in the usual manner.

Both in the development of the macrospores and in the process of fert., the difference between *Casuarina* and all other known Angiosperms (except to some degree the *Loranthaceae*) was so marked, and seemed to place *Casuarina* so much nearer to the *Gymnospermae* (q.v.), that Treub proposed to rearrange the Angiosperms thus:

Angiospermae	{ Porogamae	{ Dicotyledones.
		{ Monocotyledones.
	{ Chalazogamae	

This proposition has not met with general acceptance. The phenomenon has since been observed in various plants of the allied orders *Betulaceae*, *Fagaceae*, *Juglandaceae*, *Ulmus*, *Alchemilla*, &c., and cannot be regarded as of classificatory value. [See Nawaschin, *Bull. Ac. St Pétersb.* 1899, *Bot. Zeit.* 1900, p. 38; Murbeck, *Lunds Univ. Arsskr.* 36, *Bot. Centr.* 86, p. 121.]

Chalcanthus Boiss. (*Hesperis* L. *BH.*). Crucif. (4). 1 Persia.

Chalcoelytrum Lunell. Gramineae (2). 1 S.E. U.S.

Chalepophyllum Hook. f. Rubiaceae (I. 3). 2 Guiana.

Chalicum (Cl.), a gravel-slide formation.

Chalk-glands, *Plumbaginaceae*, *Saxifraga*; **-plant**, *Gypsophila*.

Chamabainia Wight. Urticaceae (3). 1 Indomal.

Chamae- (Gr. pref.), ground-.

Chamaealoe Berger. Liliaceae (III). 1 S. Afr.

Chamaeangis Schlechter (*Angraecum*, &c. p.p.). Orchidaceae (II. 20).

5 Madagascar, Comoros.

- Chamaeanthus** Schlechter. Orchidaceae (II. 20). 1 Java, Borneo.
- Chamaeanthus** Ule. Commelinaceae. 1 Amazon valley.
- Chamaebatia** Benth. Rosaceae (III. 3). 2 California.
- Chamaebuxus** (Tourn.) Spach = *Polygala* L. p.p. (Polygal.).
- Chamaechaenactis** Rydberg (*Chaenactis* p.p.). Comp (6). 1 U.S.
- Chamaecladon** Miq. (*Homalonema* p.p. *EP.*) Arac. (v). 40 Malaya.
- Chamaecrista** Moench. = *Cassia* Tourn. p.p. (Legum.).
- Chamaecyparis** Spach. Coniferae (Pinaceae; see C. for gen. char.). 8 N. Am., Japan. *C. nutkaensis* Spach (*Thuya excelsa* Bong.) is the Sitka cypress or yellow cedar; *C. sphaeroidea* Spach (*Thuya sphaeroidalis* Rich.) the white cedar of N. Am.; *C. (Cupressus) Lawsoniana* Parl., *C. (Th.) pisifera* Sieb. et Zucc. and *C. (Th.) obtusa* Sieb. et Zucc. are Japanese. All yield useful timber, especially the first two. The genus is much confused with *Thuya* and *Cupressus* (in nomenclature).
- Chamaedaphne** Moench. (*Lyonia* p.p. *EP.*; *Cassandra* BH.). Eric. (II. 1). 1 N. temp.
- Chamaedorea** Willd. Palmae (IV. 1). 60 trop. and subtrop. Am. Small reedy palms, often forming suckers. Dioecious.
- Chamaedrys** Moench. = *Teucrium* Tourn. p.p. (Labiata.).
- Chamaegeron** Schrenk (*Aster* p.p. *EP.*). Comp. (3). 1 C. As.
- Chamaelaucium** Desf. Myrtaceae (II. 2). 11 W. Austr. Heath-like.
- Chamaele** Miq. Umbelliferae (III. 5). 3 Japan.
- Chamaelea** (Tourn.) Adans. (*Cneorum* p.p.). Cneor. 1 Canaries.
- Chamaelirium** Willd. Liliaceae (I). 2 Atl. N. Am.
- Chamaemeles** Lindl. Rosaceae (II). 1 Madeira.
- Chamaemelum** Vis. = *Matricaria* Tourn. (Compos.).
- Chamaenerion** (Tourn.) Adans. (*Epilobium* BH.). Onagraceae (2). 4 temp. and subtrop., exc. Austr.
- Chamaeorchis** Koch (*Herminium* Willd. BH.). Orchid. (II. 1). 1 Mts. of Eur., *C. alpina* Rich. See Müller's *Alpenblumen*, p. 73.
- Chamaepericlimenum** Aschers. et Graebn. (*Cornus* Tourn. p.p. BH.). Cornaceae. 2 N. temp.
- Chamaepeuce** DC. = *Cnicus* Tourn. (BH.) = *Cirsium* Adans. p.p.
- Chamaepitys** Tourn. ex Rupp. = *Ajuga* Tourn. p.p. (Lab.).
- Chamaeranthemum** Nees. Acanthaceae (IV. B). 3 trop. Am.
- Chamaeraphis** R. Br. Gramineae (5). 5 trop., exc. Afr.
- Chamaerhodos** Bunge. Rosaceae (III. 2). 6 Siberia, N.W. Am.
- Chamaerops** L. Palmae (I. 2). 2 Medit. *C. humilis* L. is the only sp. of palm found in Eur. Decorative.
- Chamaesaracha** A. Gray. Solanaceae (2). 6 N. Am., Japan.
- Chamaescidium** C. A. Mey. Umbelliferae (III. 5). 1 W. As.
- Chamaescilla** F. Muell. Liliaceae (III). 2 W. Austr.
- Chamaesphacos** Schrenk. Labiatae (VI). 3 C. As.
- Chamaexeros** Benth. (*Acanthocarpus* Lehm. *EP.*). Liliaceae (III). (Juncaceae BH.). 2 Austr.
- Chamagrostis** Borkh. = *Mibora* Adans. (Gramin.).
- Chambeyronia** Vieill. Palmaceae (inc. sed.). 3 New Caled.
- Chamelum** Phil. Iridaceae (II). 3 Chili.
- Chamira** Thunb. Cruciferae (1). 2 S. Afr.
- Chamisal**, cf. Chaparral.

- Chamise**, *Adenostoma fasciculatum* Hook. et Arn.
Chamisme Rafin. Rubiaceae (I. 2). 5 N. Am.
Chamissoa H. B. et K. Amarantaceae (2). 5 warm Am.
Chamissonia Endl. (*Oenothera* p.p. *BH.*). Onagr. (2). 15 warm Am.
Chamomile, *Anthemis*; **wild-**, *Matricaria*.
Champak, *Michelia Champaca* L.
Champereia Griff. Opiliac. (Santal. *BH.*). 4 Indomal.
Championia Gardn. Gesneriaceae (I). 1 Ceylon.
Chamula Nor. Inc. sed. Nomen.
Change of colour in flowers, *Arnebia*, *Brunfelsia*, *Cobaea*, *Diervilla*,
Fumaria, *Lonicera*, *Ribes*.
Chaparral, the xero. scrub of the hills of Calif., incl. *Adenostoma*,
Arctostaphylos, *Baccharis*, *Ceanothus*, *Eriodictyon*, *Garrya*, *Rhus*,
dwarf oaks, currants, buckeye, roses, &c.
Chapeliera A. Rich. Rubiaceae (I. 8). 2 Madagascar.
Chapmannia Torr. et Gray. Leguminosae (III. 7). 1 Florida.
Chapmanolirion Dinter. Amaryllidaceae. 1 S.W. Afr.
Chaptalia Vent. Compositae (12). 35 warm Am., W.I.
Charachera Forsk. Acanthaceae (inc. sed.). 1 Arabia.
Charadrophila Marloth. Gesneriaceae (inc. sed.). 1 S. Afr.
Charas, *Cannabis*.
Charcoal, *Acer*, *Betula*, *Euonymus*, *Rhamnus*, &c.
Chardinia, Desf. Compositae (11). 1 W. As.
Chards, the late summer blanched l. of artichokes.
Charia C. DC. Meliaceae. 2 trop. Afr.
Charianthus D. Don. Melastomaceae (I). 8 W.I., Guiana.
Charidion Bong. Ochnaceae. 2 Brazil.
Charieis Cass. Compositae (3). 1 S. Afr.
Chariessa Miq. (*Villaresia* *BH.*). Icacinaceae. 4 E. Austr., Samoa.
Chariomma Miers (*Echites* *EP. BH.*). Apocyn. (II. 1). 7 trop.
Am.; W.I.
Charlock, *Brassica Sinapis* Vis.
Charpentiera Gaud. Amarantaceae (2). 1 Sandwich Is.
Chartaceous, of papery texture.
Chartacalyx Maingay ex Mast. Tiliaceae. 1 Malaya.
Chartocalyx Regel (*Otostegia* Benth.). Labi. (VI). 1 W. As.
Chartolepis Cass. = *Centaurea* L. p.p. (Compos.).
Chartoloma Bunge (*Isatis* p.p. *BH.*). Crucif. (2). 1 Turkestan.
Chasalia Comm. ex DC. Rubiaceae (II. 5). 15 palaeotrop.
Chascotheca Urb. Euphorbiaceae (A. I. 1). 2 W.I.
Chasea Nieuwland (*Panicum* p.p.). Gramineae (5). 10 N. Am.
Chasmanthera Hochst. Menispermaceae. 5 trop. Afr.
Chasmogamic, open, not cleistogamic.
Chasmone E. Mey. = *Argyrolobium* Eckl. et Zeyh. (Legum.).
Chastenaëa DC. = *Axinaea* Ruiz et Pav. (Melast.).
Chaubardia Reichb. f. (*Zygopetalum* *BH.*). Orch (II. 14). 1 S. Am.
Chaulmoogra, *Gynocardia*, *Taraktogenos*.
Chaunochiton Benth. Olacaceae. 1 Brazil.
Chaunostoma J. D. Smith (*Satureia* p.p.). Lab. (VI). 1 C. Am.
Chavica Miq. (*Piper* L. p.p. *BH.*). Piperaceae. 5 Indomal.
Chawstick (W.I.), *Gouania*.

Chaydaia Pitarch. Rhamnaceae. 1 Tonquin.

Chayote, *Sechium edule* Sw.

Chayotilla, *Hanburia*.

Chay-root, *Oldenlandia umbellata* L.

Cheatgrass (Am.), *Bromus*.

Checkerberry (Am.), *Gaultheria procumbens* L.

Cheilanthes Sw. Polypodiaceae. 120 trop. and temp. mostly xero.; pinnae often incurved and stomata protected by hairs (*cf.* *Empetrum*).

Cheilanthes St. Lag. Labiatae (inc. sed.). Nomen.

Cheiloclinium Miers (*Salacia* p.p. *EP.*). Hippocrat. 1 Brazil.

Cheilosa Blume. Euphorbiaceae (A. II. 6). 1 W. Java.

Cheilotheca Hook. f. Pyrolaceae. 2 E. Indomal.

Cheiradenia Lindl. Orchidaceae (II. β . II). 1 Guiana.

Cheiranthra Brongn. Pittosporaceae. 4 Austr.

Cheiranthus L. Cruciferae (4). 20 Medit. and N. temp. *C. Cheiri* L. (wall-flower) Brit. Cult. orn. perf. fl.

Cheirodendron Nutt. (*Panax* L. *BH.*). Araliac. (1). 2 Hawaii.

Cheirolaena Benth. Sterculiaceae. 1 Mauritius.

Cheiropleuria Presl. Polypodiaceae. 1 E. As.

Cheiropterocephalus Barb. Rodr. (*Microstylis* *EP.*). Orchidaceae (II. 4). 1 Brazil.

Cheirostemon Humb. et Bonpl. (*Chiranthodendron* Cerv.). Sterculiaceae. 1 Mexico. Fls. large; petals 0; sta. 5, united below.

Cheirostylis Blume. Orchidaceae (II. 2). 12 trop. Afr. and As.

Chelidonium L. Papaveraceae (II). 1 Brit. to E. As., *C. majus* L., the greater celandine.

Chelidurus Willd. Inc. sed. 1, habitat?

Chelonanthus Gilg (*Lisianthus* L.). Gentian. (1). 10 trop. S. Am.

Chelone L. Scrophulariaceae (II. 4). 4 N. Am.

Chelonecarya Pierre. Menispermaceae. 1 Gaboon.

Chelonespermum Hemsl. Sapotaceae. 4 Solomon Is., Fiji.

Chelonistele Pfitzer (*Coelogyne*, &c. p.p.). Orchid. (II. 3). 5 Indomal.

Chelonopsis Miq. Labiatae (VI). 2 Japan, China.

Chemotropism, sensitiveness to chemical stimulus.

Chena, burning of forest for a couple of crops.

Chenolea Thunb. (*BH.* incl. *Bassia* All.). Chenopodiaceae (A). 3 Medit., S. Afr.

Chenopodiaceae (*EP.*; *BH.* incl. *Basellaceae*). Dicots. (Archichl. Centrospermae; Curvembryae *BH.*). 75 gen., 500 sp. with an interesting geographical distr., determined by the fact that they are nearly all halophytic. The 10 chief districts char. by their presence are (according to Bunge), (1) Austr., (2) the Pampas, (3) the Prairies, (4) and (5) the Medit. coasts, (6) the Karroo (S. Afr.), (7) the Red Sea shores, (8) the S.W. Caspian coast, (9) Centr. As. (Caspian to Himalayas—deserts), (10) the salt steppes of E. As. The presence of large quantities of salt in the soil necessitates the reduction of the transpiration, so that the pl. which grow in such situations exhibit xero. characters. They are mostly herbs (a few shrubs or small trees), with roots which penetrate deeply into the soil, and with l. of various types, usu. not large, often fleshy, and often covered with hairs, which frequently give a curious and very char. mealy feeling

to the pl. In some halophytes of this fam. the l. are altogether suppressed, and the pl. has curious jointed succulent stems like a miniature cactus (e.g. *Salicornia*). Each 'limb' embraces the next succeeding one by a sort of cup at its apex. Even more than in their external form, the C. show xero. structure in their internal anatomy.

Infl. often primarily racemose, but the partial infls. are always cymose, at first often dich., but with a tendency to the cincinnus form, by preference of the β -bracteole. The fls. are reg., small and inconspic., $\varnothing$ or unisex. P simple, rarely absent, persistent after flowering, 5, 3, 2 (rarely 1 or 4) $\pm$ united, imbr., sepaloid; A as many as or fewer than P segments, opp. to them, hypog. or on a disc; anthers bent inwards in bud; $\bar{G}$ (semi-inf. in Beta), 1-loc. with 2 (rarely more) stigmas; ov. 1, basal, campylotropous. Fr. usu. a small round nut or achene; embryo usu. surrounding the endosp., either simply bent or spirally twisted. Few are useful; see Beta, Spinacia, Chenopodium, &c.

Classification and chief genera (after Volkens).

A. *CYCLOLOBEAE*. Embryo ring-shaped, horseshoe-like, conduplicate or semicircular, wholly or partially enclosing endosp.; Polycnemon, Beta, Chenopodium, Spinacia, Atriplex, Camphorosma, Kochia, Corispermum, *Salicornia*.

B. *SPIROLOBEAE*. Embryo spirally twisted; endosp. wanting or divided into two masses by embryo; *Sarcobatus*, Suaeda, *Salsola*, *Haloxylon*, *Halimocnemis*.

Chenopodium (Tourn.) L. Chenopodiaceae (A). 60 temp., 9 Brit. (goosefoot, lamb's-quarters, Good King Henry, &c.). Fr. in many dimorphic; some have horiz. seeds, some vertical (esp. on the term. twigs of the cymes). *C. anthelminticum* (*ambrosioides*) L. (worm-seed or Mexican tea) essential oil is used as a vermifuge in the U.S. *C. Quinoa* Willd. is a food plant in S. Am.; its seeds are boiled like rice. It and other spp. are used as spinach.

Cherimolia, cherimoyer, *Anona Cherimolia* Mill.

Cherleria Hall. = *Arenaria* L. (BH.) = *Alsine* Scop. (Caryophyll.).

Cherry, *Prunus Cerasus* L.; **Barbados-**, *Malpighia*; **bastard-** (W.I.), *Ehretia*; **-bean**, *Vigna*; **broad-leaved-** (W.I.), *Cordia macrophylla* L.; **clammy-** (W.I.), *Cordia Collococca* L.; **Cornelian-**, *Cornus mas* L.; **Jamaica-** (W.I.), *Ficus pedunculata* Ait.; **-laurel**, *Prunus Lauro-cerasus* L.; **-pie**, *Heliotropium*; **W. Indian-**, *Malpighia*, *Bunchosia*; **winter-**, *Physalis Alkekengi* L.

Chersium (Cl.), a dry waste formation.

Chervil, *Anthriscus sylvestris* Hoffm., *Chaerophyllum temulum* L.

Chess (Am.), *Bromus*.

Chestnut, *Castanea vulgaris* Lam.; **Australian** or **Moreton Bay**, *Castanospermum australe* A. Cunn.; **horse-**, *Aesculus Hippocastanum* L.; **wild-**, *Brabejum*.

Chevalieria Gaudich. (*Aechmea* p.p. BH.). Bromel. (4). 5 S. Am.

Chevreulia Cass. Compositae (4). 8 S. Am.

Chewing gum, *Achras Sapota* L.

Chian turpentine, *Pistacia Terebinthus* L.

Chibaca Bertol. f. Lauraceae (inc. sed.). 1 S. Afr.

Chibou, *Bursera gummifera* L.

Chick-pea, *Cicer arietinum* L., *Cajanus indicus* Spr.

Chickrassia (*Chukrasia*) A. Juss. Meliaceae (11). 1 India, Ceylon, *C. tabularis* A. Juss. Timber valuable (Indian red wood, Chittagong wood, white cedar).

Chickweed, *Stellaria media* Cyrill.; (W.I.), *Drymaria cordata* Willd.; African (W.I.), *Mollugo*; **mouse-ear-**, *Cerastium*; **-wintergreen**, *Trientalis*.

Chicle gum, *Achras Sapota* L.

Chicory, *Cichorium Intybus* L.

Chileranthemum Oerst. Acanthaceae (IV. B). 1 Mexico.

Chilianthus Burchell. Loganiaceae. 3 S. Afr.

Chiliocephalum Benth. Compositae (4). 1 Abyssinia.

Chiliophyllum Phil. Compositae (3). 2 Chili, Andes.

Chiliotrichum Cass. Compositae (3). 5 temp. S. Am.

Chillies, *Capsicum annum* L.

Chilocalyx Klotzsch (*Cleome* p.p. *BH.*). Capparid. (v). 2 E. Afr.

Chilocarpus Blume. Apocynaceae (I. 1). 10 Indomal.

Chilochloa Beauv. = *Phleum* L. p.p. (Gramin.).

Chiloglottis R. Br. Orchidaceae (II. 2). 6 Austr., N.Z.

Chilopogon Schlechter. Orchidaceae (II. a. III). 3 New Guinea.

Chilopsis D. Don. Bignoniaceae (2). 1 Mexico.

Chiloschista Lindl. (*Sarcophilus* p.p. *BH.*). Orch. (II. 20). 2 Indomal.

Chimaphila Pursh. Pyrolaceae. 4 N. temp.

Chimarrhis Jacq. Rubiaceae (I. 1). 2 W.I., Andes.

Chimonanthus Lindl. (*Calycanthus* p.p. *EP.*). Calycanthaceae. 2 China, *C. fragrans* Lindl., cult. shrub with very fragrant fls. which come out early in the year before the l. and show marked protogyny with movement of sta., and *C. nitens* Oliv. (Hooker, *Ic. Pl.* t. 1600).

Chimonobambusa Makino (*Bambusa* p.p.). Gramin. (13). 2 Japan.

Chin, cf. Orchidaceae.

China aster, *Callistephus hortensis* Cass.; **-grass**, *Boehmeria nivea* Gaudich.; **-jute**, *Abutilon*; **-root** (W.I.), *Vitis sicyoides* Mig.; **-wythe** (W.I.), *Smilax Balbisiana* Kunth. And next.

Chinese date-plum, *Diospyros Kaki* L. f.; **-grass-cloth**, *Boehmeria nivea* Gaudich.; **-green indigo**, *Rhamnus chlorophora* Decne.; **-ivy**, **-jasmine**, *Trachelospermum*; **-sacred lily**, *Narcissus*.

Chinquapin (Am.), *Castanea pumila* Michx.

Chiococca P. Br. ex L. Rubiaceae (II. 3). 7 trop. Am., W.I.

Chiogenes Salisb. Eric. (II. 2). 1 E. N. Am., 1 Japan (cf. *Epigaea*).

Chionachne R. Br. Gramineae (1). 5 Indomal., E. As., Austr. *C. cyathopoda* F. von Muell., valuable fodder-grass.

Chionanthula Börner (*Carex* p.p.). Cyper. (III). 2 N. palaeotemp.

Chionanthus Gaertn. = *Linociera* Sw. (*Mayepea* Aubl.) (Oleaceae).

Chionanthus Royen ex L. Oleaceae. 2 N. Am., China. *C. virginica* L. (snowdrop tree) cult. orn. flg. shrub.

Chione DC. Rubiaceae (II. 3). 5 W. Ind.

Chionium (Cl.), a snow formation.

Chionodoxa Boiss. Liliaceae (v). 4 Crete and As. Minor. *C. luciliae* Boiss. (glory of the snow) cult. orn. fl.

- Chionographis** Maxim. Liliaceae (1). 2 Japan.
- Chionolaena** DC. Compositae (4). 8 Mexico, S. Am. Shrubs with the l. rolled back.
- Chionopappus** Benth. Compositae (12). 1 Peru.
- Chionophila** Benth. Scrophulariaceae (II. 4). 2 Rocky Mts.
- Chionopectera** DC. (*Pachylaena* Don). Comp. (12). 1 Andes.
- Chionothesis** Hook. f. Amarantaceae (2). 1 Somaliland.
- Chiquito**, *Combretum*.
- Chiranthodendron** Cerv. (*Cheirostemon*). Stercul. 1 Mexico.
- Chiretta**, *Swertia Chirata* Ham.
- Chirimoya**, *Anona Cherimolia* Mill.
- Chirita** Buch.-Ham. (*Didymocarpus* or *Roettlera* p.p.). Gesneraceae (1). 50 Indomal., some with epiphyllous infl. (cf. *B. Centr.* 74, p. 128).
- Chironia** L. Gentianaceae (1). 30 Afr., Madag.
- Chiropetalum** A. Juss. (*Argithamnia* Sw. *BH.*). Euphorbiaceae (A. II. 2). 15 S. Am. to Mexico.
- Chisocheton** Blume. Meliaceae (III). 30 Indomal.
- Chitonanthera** Schlechter. Orchidaceae (II. 15). 3 New Guinea.
- Chitonia** Moc. et Sesse. Zygophyllaceae. 1 Mexico.
- Chitonochilus** Schlechter. Orchid. (II. a. III). 1 New Guinea.
- Chittagong wood**, *Chickrassia tabularis* A. Juss.
- Chive**, *Allium Schoenoprasum* L.
- Chlaenaceae** (*EP.*, *BH.*). Dicots. (Archichl. Parietales; Guttiferales *BH.*). 7 gen., 25 sp. Madagascar. Trees with alt. entire stip. l.; fl. sol. or 2 in an invol., in racemose infl., ♂, reg. K 5, C 5—6, A 10—∞, G (3), each with 2 ov. Caps. 3 or 1-loc. Endosp.
- Chief genus*
- Chlaenandra** Miq. Menispermaceae. 1 New Guinea.
- Chlainanthus** Briq. Labiatae (VI). 1 Asia.
- Chlamydacanthus** Lindau. Acanthaceae (IV. B). 1 Madag.
- Chlamydeous**, with perianth.
- Chlamyditis** J. K. Drumm. Compositae (8). 1 Tibet.
- Chlamydobera** Stapf. Gesneraceae (1). 1 China, Burma.
- Chlamydocardia** Lindau. Acanthaceae (IV. B). 3 W. Afr.
- Chlamydocarya** Baill. Icacinaceae. 8 trop. W. Afr.
- Chlamydojatropha** Pax et K. Hoffm. Euphorb. (A. II. 3). 1 Cameroons.
- Chlamydostylis** Baker = *Nemastylis* Nutt. p.p. (Irid.).
- Chlamyphorus** Klatt (*Gomphrena* p.p.). Amarant. (3). 1 Brazil.
- Chledium** (Cl.), a ruderal formation.
- Chlidanthus** Herb. Amaryllidaceae (1). 4 S. Am. Sta. with lat. appendages (see fam.).
- Chloanthus** R. Br. Verbenaceae (3). 10 Austr.
- Chlora** Ren. ex Adans. (*Blackstonia* Huds.). Gentianaceae (1). 3 Eur., Medit. *C. perfoliata* L. (yellow-wort) on chalk in Brit.
- Chloradenia** Baill. (*Adenogynum EP.*). Euph. (A. II. 2). 1 Malaya.
- Chloraea** Lindl. Orchidaceae (II. 2). 100 S. Am.
- Chloranthaceae**. Dicots. (Archichl. Piperales; Micrembryae *BH.*). 3 gen., 35 sp., trop. and subtrop. Herbs, shrubs, or trees, with opp. stip. l. Fls. small, in spikes or cymes, ♂ or unisex, sometimes with sepaloïd P; A 1—3, united to one another and to ovary;

- G** 1; ov. few, pend., orthotr. Endosp. oily; no perisperm; embryo minute. *Chief genera*: Chloranthus, Hedyosmum.
- Chloranthus** Sw. Chloranth. 10 E. As., E. Ind. P 1, anterior; the centre sta. has a complete anther, the lat. each half (*cf.* Fumaria).
- Chloridion** Stapf. Gramineae (5). 1 trop. Afr.
- Chloris** Sw. Gramineae (11). 40 trop. and warm temp. Several are useful pasture-grasses in Austr., &c.
- Chloro-** (Gr. pref.), green, yellow; **-phyll**, the green colouring matter of l.; **-in the fl.** Deherainia; **-plastids**, carriers of.
- Chlorocodon** Hook. f. Asclepiadaceae (1). 2 E. and S.E. Afr.
- Chlorocrambe** Rydberg (*Caulanthus* p.p.). Cruc. (1). 1 N. Am.
- Chlorocyathus** Oliv. Asclepiadaceae (1). 1 Delagoa Bay.
- Chlorocyperus** Rikli = *Cyperus* L. (Cyperac.).
- Chlorogalum** Kunth. Liliaceae (III). 3 Calif. *C. pomeridianum* Kunth has a large bulb whose inner parts are used as a substitute for soap (*cf.* Saponaria). The outer layers yield a quantity of fibre.
- Chloromyrtus** Pierre (*Eugenia* p.p. *EP.*). Myrt. (1). 1 trop. Afr.
- Chloropatane** Engl. Monimiaceae. 2 trop. Afr.
- Chlorophora** Gaudich. Moraceae (1). 3 W. Afr., trop. Am. The wood of the latter (*C. tinctoria* Gaudich.) forms the yellow dye fustic.
- Chlorophytum** Ker-Gawl. Liliaceae (III). 50 trop. In *C. comosum* Baker infl. often replaced by veg. repr.; long shoots develop in the axils of the br., weigh the stem down to the soil and take root. Cult. orn.
- Chloropyron** Behr. = *Cordylanthus* Nutt. (Scroph.).
- Chlorosa** Blume. Orchidaceae (II. 2). 1 Java.
- Chlorospatha** Engl. Araceae (VI). 1 Colombia.
- Chloroxylon** Rumph. Rutaceae (III) (Meliaceae, *BH.*). 1 E. Ind., *C. Swietenia* DC. (satinwood). Timber very lasting, largely used in veneering. The tree also yields a gum.
- Chloroxylum** P. Br. Inc. sed. Quid?
- Chloryllis** E. Mey. (*Dolichos* p.p. *BH.*). Legum. (III. 10). 1 S. Afr.
- Choananthus** Rendle. Amaryllidaceae (1). 2 Ruwenzori.
- Chocho**, *Sechium edule* Sw.
- Chocolate**, *Theobroma*.
- Chodanthus** Hassler (*Adenocalymma* p.p.). Bign. (1). 1 Braz.
- Choisya** H. B. et K. Rutaceae (1). 1 Mexico. Cult. orn. shrub.
- Choke-berry** (Am.), *Pyrus arbutifolia* L.
- Chomelia** Jacq., non L. (*Anisomeris* Presl *EP.*). Rubiaceae (II. 2). 30 trop. S. Am., Afr.
- Chomelia** L., non Jacq. (*Tarenna* Gaertn. *BH.*). Rubi. (1. 8). 30 trop. As., Afr.
- Chondilophyllum** Panch. ex Guillaumin (*Meryta* Forst. p.p.). Araliaceae. 1 New Caledonia.
- Chondodendron** Ruiz et Pav. Menispermaceae. 10 Brazil, Peru, trop. Afr. *C. tomentosum* R. P. furnishes Radix Pareirae bravae.
- Chondrilla** (Tourn.) L. Compositae (13). 20 N. temp.
- Chondrobollea** × Hort. Orchidaceae. Hybrid of *Chondrorhyncha* and *Bollea*. Also **Chondropetalum** × Hort. Hybrid with *Zygotetalum*.
- Chondrophylla** A. Nelson (*Gentiana* p.p.). Gentian. (1). 2 N. Am.

- Chondrorrhyncha** Lindl. Orchid. (II. β . II). 2 Colombia. Cult.
- Chondrosea** Haw. = *Saxifraga* Tourn. p.p. (Saxifr.).
- Chondrostylis** Boerlage. Euphorb. (A. II. 2). 1 Malaya.
- Chondrosium** Desv. = *Bouteloua* Lag. p.p. (Gramin.).
- Chonemorpha** G. Don. Apocynaceae (II. 1). 2 Indomal.
- Chordospartium** Cheesem. Leguminosae (III. 6). 1 N.Z.
- Choretum** R. Br. Santalaceae. 5 Austr.
- Chorilaena** Endl. Rutaceae (1). 3 W. Austr.
- Chorilepis** Van Tiegh. (*Loranthus* p.p.). Loranth. (1). 3 Malaya, Phil. Is.
- Chorioluma** Baill. (*Sideroxylon* p.p. *EP.*). Sapot. (1). 1 New Caled.
- Choriophyllum** Benth. Euphorb. (A. I. 1). 2 Malay Arch.
- Choripetalae** (Warming) = Archichlamydeae.
- Choripetalous**, polypetalous.
- Chorisia** H. B. et K. Bombacaceae. 5 S. Am. *C. speciosa* St Hil.
(paina de seda) gives a useful silky cotton from the pods.
- Chorisis**, branching in floral organs.
- Chorispora** R. Br. Cruciferae (4). 12 E. Medit., Centr. As.
- Choristega** Van Tiegh. (*Loranthus* p.p.). Loranth. (1). 2 Celebes.
- Choristegeres** Van Tiegh. (ditto). Loranth. (1). 1 Borneo.
- Choristigma** F. Kurtz. Asclepiadaceae (II. 1). 1 Argentina.
- Choristylis** Harv. Saxifragaceae (v). 1 S. Afr.
- Choritaenia** Benth. (*Pappea* Sond. et Harv. *EP.*). Umbelliferae (III. 6). 1 S. Afr.
- Chorizandra** R. Br. Cyperaceae (II). 4 Austr.
- Chorizanthé** R. Br. Polygon. (I. 1). 35 Am. Some have an ochrea, usu. absent in this group. Fls. usu. single inside the invol. (*cf.* *Eriogonum*).
- Chorizema** Labill. Leguminosae (III. 2). 15 Austr.
- Chortolirion** Berger (*Haworthia* p.p.). Lili. (III). 4 Afr.
- Chowlee** (India), *Vigna Catjang* Walp.
- Christ's thorn**, *Paliurus aculeatus* Lam.
- Christensenia** Maxon. Marattiaceae. 1 Phil. Is.
- Christiana** DC. Tiliaceae. 1 Madag. to Guiana.
- Christisonia** Gardn. Orobanchaceae. 10 trop. As. Roots parasitic on those of bamboos or Acanthaceae, united to a dense meshwork. The flg. shoots spring up, die, and decay, in a fortnight.
- Christmannia** Dennst. Inc. sed. 1 E. Indies.
- Christmas gambol** (W.I.), *Ipomoea sidifolia* Choisy; -**pride** (W.I.), *Ruellia paniculata* L.; -**rose**, *Helleborus niger* L.
- Christolea** Cambess. Cruciferae (4). 2 W. and C. As.
- Christophine** (W.I.), *Sechium edule* Sw.
- Christopteris** Copeland. Polypodiaceae. 2 S.E. As.
- Chroilema** Bernh. Compositae (3). 1 Chili.
- Chromanthus** Phil. Portulacaceae. 1 Chili.
- Chromolepis** Benth. Compositae (5). 1 Mexico.
- Chromoplastids**, carriers of colouring matters.
- Chroncpappus** DC. Compositae (1). 1 Minas Geraes.
- Chrozophora** Neck. Euphorbiaceae (A. II. 2). 10 Medit., W. As., N. Afr. *C. tinctoria* A. Juss. and *C. verbascifolia* Juss. are characteristic plants of the Medit. region. The former, once medicinal, is

still sometimes used as the source of the dye turn-sole, tournesol, or bezetta rubra.

- Chrysactinia** A. Gray. Compositae (6). 3 Mex., S.W. U.S. •
- Chrysalidocarpus** H. Wendl. (*Hyophorbe* p.p. *EP.*). Palmae (IV. 1). 1 Madag., *C. lutescens* H. Wendl. a favourite orn. palm, branching at the r. and forming tufts of stems.
- Chrysanthellum** L. C. Rich. Compositae (5). 4 trop.
- Chrysanthemum** (Tourn.) L. (incl. *Pyrethrum* Hall.). Compositae (7). 150 Eur., As., Afr., Am. *C. segetum* L. (corn-marigold) and *C. Leucanthemum* L. (ox-eye or dog daisy) Brit. The autumn-flowering *C.* are cult. forms of *C. indicum* L. and *C. sinense* Sabine (China, Japan). As in *Dahlia*, all florets have become ligulate (Hemsley in *Gard. Chron.* 1889, p. 521, &c.; Henry in *Gard. Chron.*, 1902, p. 301, and discussion by Hooker in Curtis, *Bot. Mag.* t. 7874). *C. Parthenium* Bernh. (feverfew, Eur.), a popular remedy against fevers; *C. cinerariaefolium* Vis. yields Dalmatian, and *C. roseum* Adam. Persian, insect powder (the dried and powdered fls.), *Kew Bull.* 1898, p. 297.
- Chryseus** (Lat.), **chryso-** (Gr. pref.), golden yellow.
- Chrysithrix** L. Cyperaceae (II). 2 S. Afr., 1 W. Austr.
- Chrysobalanaceae** (Warming) = Rosaceae (§ vi).
- Chrysobalanus** L. Rosaceae (vi). 4 Afr., Am. Style basal, so that the flr. is slightly $\perp$. *C. Icaco* L. (coco plum), W. Ind., fr. ed.
- Chrysocephalum** Walp. = *Helichrysum* Vaill. p.p. (Comp.).
- Chrysochamela** Boiss. (*Cochlearia* p.p. *BH.*). Cruc. (4). 3 E. Medit.
- Chrysochlamys** Poepp. et Endl. Guttiferae (v). 10 trop. Am.
- Chrysocoma** L. Compositae (3). 10 S. and trop. Afr. *C. Linosyris* L. see *Aster*.
- Chrysocoptis** Nutt. (*Coptis* p.p.). Ranunc. (2). 1 N.W. Am.
- Chrysocychnis** Lindau et Reichb. f. Orch. (II. 13). 2 Colombia.
- Chrysoglossum** Blume. Orchid. (II. a. II). 10 Indomal., Polynes.
- Chrysogonum** L. (excl. *Moonia* Arn.). Compositae (5). 1 E. U.S.
- Chrysoliga** Willd. = *Nesaea* Comm. (Lythrac.).
- Chrysoma** Nutt. = *Solidago* Vaill. (Compos.).
- Chrysophthalmum** Schulz-Bip. Compositae (4). 2 W. As.
- Chrysophyllum** L. Sapotaceae (I). 80 trop., esp. Am. Serial buds form in each leaf-axil in some sp. and the undeveloped ones subsequently give rise to fls. borne on the old wood (cauliflory, *q.v.*). *C. Cainito* L. (star-apple, W. Ind.), cult. ed. fr.
- Chrysopogon** Trin. (*Andropogon* L. p.p. *EP.*). Gram. (2). 12 trop., subtrop.
- Chrysopsis** Ell. Compositae (3). 30 N. Am.
- Chrysosplenium** Tourn. ex L. Saxifragaceae (I). 45 N. temp., temp. S. Am., 2 Brit. (golden saxifrage). Rhiz. bears both veg. and fl. shoots. Infl. cymose. The small greenish fls. are perig. and ap. et., homogamous. *Cf.* *Adoxa*.
- Chrysothamnus** Nutt. (*Bigelovia* p.p.). Compos. (3). 50 Am.
- Chthamalia** Decne. (*Gonolobus* *BH.*). Asclep. (II. 4). 6 trop. Am.
- Chthonocephalus** Steetz. Compositae (4). 3 temp. Austr.
- Chukrasia** (*Chickrassia*, *q.v.*) A. Juss. Meli. (II). 1 Indomal.
- Chuncoa** Pav. = *Terminalia* L. p.p. (Combret.).
- Chuquiraga** Juss. Compos. (12). 50 S. Am. In each axil are thorns,

probably repres. l. of an undeveloped branch; above is a normal branch.

Churrus, charas, *Cannabis*.

Chusquea Kunth. Gramineae (13). 35 Am. Like *Bambusa* (*q.v.*).
Char. of high plateau in S. Am.

Chydenanthus Miers (*Barringtonia* p.p. *BH.*). Lecyth. 1 Java.

Chylismia Nutt. (*Oenothera* p.p.). Onagr. (2). 10 W. U.S.

Chylocauly, stem succulence; **-phyly**, leaf succulence.

Chymococca Meissn. Thymelaeaceae. 1 S. Afr.

Chymysdia Alboff (*Agasyllis* *EP.*). Umbell. (III. 6). 1 Cameroons.

Chysis Lindl. Orchidaceae (II. 9). 6 trop. Am. Cult.

Chytranthus Hook. f. Sapindaceae (1). 10 trop. W. Afr.

Chytroglossa Reichb. f. Orchidaceae (II. 19). 2 Brazil.

Cibotium Kaulf. Cyatheaceae. 10 trop. Am., Polynesia, As. The famous Tartarian lamb of early travellers was the rhiz. of *C. barometz* Link.

Cicatrix, a scar.

Cicca L. = *Phyllanthus* L. p.p. (Euph.).

Cicely, *Myrrhis odorata* Scop.

Cicendia Adans. Gentianaceae (1). 1, *C. pusilla* Griseb., S.W. Eur. and Channel Is. (For *C. filiformis* Delarb. see *Microcala.*)

Cicer (Tourn.) L. Legum. (III. 9). 15 W. As. Accessory buds in axils in some. *C. arietinum* L. (chick-pea, gram), cult. food S. Eur., Ind.

Cichorium (Tourn.) L. Compos. (13). 8 Medit., Eur., N. As. *C. Intybus* L. (chicory), Brit. The r., roasted and ground, are mixed with coffee. *C. Endivia* L. (endive), a pot-herb; its l. being blanched.

Ciconium Sweet = *Pelargonium* L'Hérit. p.p. (Geran.).

Cicuta (Tourn.) L. Umbelliferae (III. 5). 6 N. temp. *C. virosa* L. (cow-bane or water-hemlock) Brit. Highly poisonous.

Cienfuegosia Cav. (*Fugosia* Juss.). Malv. (4). 30 Am., Afr., Austr.

Cienkowskia Regel et Rach. Boragin. (?). 1, habitat?

Cilia, hair-like bodies; **-te**, with fine projecting hairs.

Cimicifuga L. (*Actaea* L. p.p. *EP.*). Ranunc. (2). 12 N. temp. *C. foetida* L. (bugbane, Eur.), used as preventive against vermin. R. of *C. racemosa* Nutt. (black snake-root, N. Am.) emetic.

Cinchona L. Rubiaceae (1. 5). 40 Andes. Trees. Fl. heterostyled in some. The source of Peruvian or Jesuit's bark, from which are extracted the valuable drugs (alkaloids) quinine, cinchonidine, &c. The tree used to be cut down to obtain the bark and there was danger of extinction until cult. was started on a large scale. An expedition to the Andes in 1859 brought it to the east, where Ceylon took up its cult., and upon so large a scale as to reduce the price of quinine from 12s. to 1s. an ounce. Decrease in price, the lack of any improvement in the barks, and attacks of disease, made the cult. die out in Ceylon, and Java, where improvement was taken in hand, now almost monopolises it. India grows a good deal for supply to natives through the post offices. Several sp. are used, e.g. *C. Calisaya* Wedd. (yellow, and some crown, bark), *C. Ledgeriana* Moens (yellow bark, the richest in alkaloid), *C. cordifolia* Mutis (Cartagena bark), *C. officinalis* L. (*condaminea* H. & B.) (*Loxa*, crown or brown bark), *C. succirubra*

Pay. (red bark). (Markham, *Travels in Peru and India*; Reimers, *Les quinquinas de culture*, 1900.)

Cinchonidin, *Cinchona*.

Cinnobotrys Gilg. Melastomaceae (1). 2 trop. Afr.

Cinnus, a monoch. cyme in which the successive lat. branches fall alt. on either side of the relatively main axis; *Bignoniaceae*, *Boraginaceae*, *Canna*, *Caryophyllaceae*, *Chenopodiaceae*, *Commelinaceae*, *Crassulaceae*, *Geranium*, *Helianthemum*, *Heliconia*, *Hydrophyllaceae*, *Hyoscyamus*, *Linaceae*, *Solanaceae*, *Strelitzia*, *Tradescantia*, *Urtica*, *Verbenaceae*.

Cineraria L. p.p. Compositae (8). 35 Afr., Madag. Many sp. of *Senecio* are often included in this genus. Cult. orn. fl.

Cinereus (Lat.), ash grey.

Cinga Nor. Inc. sed. Nomen.

Cinna L. Gramineae (8). 2 N. temp.

Cinnagrostis Griseb. Gramineae (8). 1 Argentina.

Cinnamodendron Endl. Winteranaceae. 3 Brazil, W. Ind.

Cinnamomeous, light yellowish brown.

Cinnamomum (Tourn.) L. Lauraceae (1). 60 Indomal. Young leaves often red. *C. zeylanicum* Nees (Ceylon) is the cinnamon. The pl. is coppiced in cult., and the bark of the twigs peeled off and rolled up is the spice. *C. Cassia* Blume (China, Japan) yields Cassia bark, often used to adulterate cinnamon. Its fl. buds are used as a spice (*cf.* *Eugenia*). *C. Camphora* T. Nees & Eberm. (China, Japan, Formosa) is the camphor. The old trees are felled, and the wood cut into chips and distilled with steam, but in cult. the camphor is distilled from young shoots.

Cinnamon, *Cinnamomum zeylanicum* Nees, (Am.) *Canella*; **wild-**(Ceylon), *Litsea zeylanica* Nees, (W.I.) *Canella alba* Murr., *Pimenta acris* Kostel.

Cinnamosma Baill. Winteranaceae. 1 Madag.

Cinquefoil, *Potentilla reptans* L.

Cionosicyos Griseb. Cucurbit. (3). 1 Jamaica.

Cipadessa Blume. Meliaceae (III). 4 Indomal., Madag.

Cipre (W.I.), *Cordia Gerascanthus* L.

Cipura Aubl. Iridaceae (II). 5 trop. Am.

Cipuropsis Ule. Bromeliaceae (1). 1 Peru.

Circaea Tourn. ex L. Onagraceae (2). 9 N. temp. and arctic; 2 Brit. (enchanter's nightshade). Fl. dimerous with one whorl sta. Fr. hooked.

Circaeaster Maxim. Chloranthaceae. 1 Himal., China. K 2—3, C o, A 1—2, G 1—4; fr. hooked. (Hooker, *Icones Pl.*, t. 2366.)

Circinate (aestivation), l. rolled up like watch-springs, *Filicineae* *Leptospor.*, *Marsileaceae*, petals of *Hamamelidaceae*.

Circinus Med. (*Hymenocarpus* Savi). Legum. (III. 5). 1 Medit.

Circumscissile, opening by splitting off a lid, *Anagallis*.

Cirrhaea Lindl. Orchidaceae (II. 13). 5 Brazil.

Cirriferous, tendril-bearing: **cirrhose**, tendrilled.

Cirrhopetalum Lindl. Orchidaceae (II. 16). 70 Indomal., Masc.

Cirsium (Tourn.) Adans. (*Cnicus* L. p.p. *EP.*). Compositae (II). 200 N. temp.

Cissampelos L. Menispermaceae. 70 trop. and subtrop. ♂ infl.

cymose. ♀ fl. with peculiar zygomorphic structure; epl. one, with one sepal and two petals at one side of it. Petals often united.

Cissus L. (*Vitis* Tourn. *BH.*). Vitaceae. 275 trop.

Cistaceae (*EP.*, *Cistineae* *BH.*). Dicots. (Archichl. Parietales *EP.*, *BH.*). 4 gen., 160 sp., in dry sunny places, esp. on chalky or sandy soil, a few in S. Am., the rest N. temp. (esp. *Medit.*). Shrubs and herbs with opp. rarely alt. leaves, often inrolled (*cf.* *Ericaceae*), with or without stipules. Glandular hairs usu. present. Fls. sol. or in cymose infl., ♂, reg. $\overline{K}$ 5, the two outer usu. smaller than the inner (sometimes regarded as bracteoles, but these are found lower down); $\overline{C}$ 5 or 3 or 0, conv. (the petals overlap to right or left according as the 3 inner sepals overlap to left or right); $\overline{A}$ ∞ on a sub-ovarial disc (sta. developed in descending order); $\overline{G}$ (5—10 or 3) 1-loc. with parietal (often projecting) plac.; ov. ∞ or 2 on each, ascending, orthotr.; styles free. Caps. loculic. Endosp.; curved embryo. *Genera*: *Cistus* (ovules ∞ , capsule 5-valved), *Helianthemum* (do., 3-valved), *Hudsonia* (ovules 2, petals 5), *Lechea* (do., petals 3 or 0).

Cistanche Hoffgg. et Link. Orobanchaceae. 12 |*.

Cistanthera K. Schum. Tiliaceae. 3 trop. Afr.

Cistiflorae (Warming). The 10th cohort of Choripetalae.

Cistineae (*BH.*) = *Cistaceae*.

Cistula Nor. Inc. sed. Nomen.

Cistus (Tourn.) L. *Cistaceae*. 35 *Medit.* *C. creticus* L. and *C. ladaniferus* L. yield the resin ladanum (not laudanum), formerly offic. Many favourite cool-house shrubs (gum-cistus).

Citharella Nor. Inc. sed. Nomen.

Cithareloma Bunge. Cruciferae (4). 2 Turkestan.

Citharexylum Mill. Verbenaceae (1). 35 warm Am. The common name fiddle-wood is a corruption of Bois-fidèle.

Citriobatus A. Cunn. Pittosporaceae. 2 S.W. Austr.

Citriosma Ruiz et Pav. = *Siparuna* Aubl. (Monim.).

Citron, *Citrus medica* L.

Citronella oil, *Cymbopogon Nardus* Rendle, *C. Winterianus* Jowitt.

Citropsis Swingle et Kellermann (*Limonia* p.p.). Rutaceae (v). 4 trop. Afr.

Citrullus Forsk. Cucurbitaceae (3). 4 |*. *C. vulgaris* Schrad. (water-melon), *C. Colocynthis* Schrad. (colocynth), fr. a drug.

Citrus L. Rutaceae (v). 10 sp. trop. Old World. Shrubs and trees with usu. simple l., which show a joint at the meeting place of blade and stalk, indicating their derivation from cpd. l. like those of most of the fam. (*cf.* *Berberis*). Axillary thorns in some (=metamorphosed l. of the branch shoot). Fls. in corymbs, ♂. $\overline{K}$ and $\overline{C}$ 4—8; $\overline{A}$ ∞ in irreg. bundles, corresp. to an outer whorl only; $\overline{G}$ (∞) (6 or more). A second whorl sometimes appears. Fr. a berry with leathery epicarp, the flesh made up of large cells which grow out from the inner layer of the pericarp.

Many cult. in warm countries, esp. California, the W. Indies, Brazil, the *Medit.* region, &c.; for their fr. *C. Medica* L., the citron, is the parent sp. of several varieties, *e.g.* var. *Limonum* the lemon, var. *acida* the lime, var. *Limetta* the sweet lime. *C. Aurantium* L. is the orange, with its vars. *Bergamia*, the Bergamot orange (from which the

- perfume is obtained), *Bigaradia* or *amara* the Seville or bitter orange, used in marmalade, *C. decumana* the shaddock, or pomelo, with its var. the grape-fruit, *C. sinensis*, the Malta or Portugal orange, *C. suntara* Engl., the suntara or kumquat, and others. *C. nobilis* Lour. is the true mandarin orange. Cf. De Candolle, *Orig. of Cult. Plts.* p. 176; Engler in *Nat. Pfl.*; Bonavia, *Oranges... of India and Ceylon*.
- Cladanthus** Cass. Compositae (7). 1 S. Spain, Morocco.
- Claderia** Hook. f. Orchidaceae (11. 5). 1 Perak.
- Cladium** P. Br. Cyperaceae (11). 30 trop. and temp., esp. Austr.
C. Mariscus R. Br. (*germanicum* Schrad.), Brit.
- Cladode**, phylloclade of one internode.
- Cladogynos** Zipp. ex Span. Euphorb. (A. 11. 2). 1 Malay Arch.
- Cladopus** Möller. Podostemaceae. 1 Java.
- Cladostemon** A. Br. et Vatke. Capparid. (11). 1 Zanzibar.
- Cladostigma** Radlk. Convolvul. (1). 1 Abyssinia. Ed. fr.
- Cladothamnus** Brongn. Ericaceae (1. 1). 1 N.W. N. Am.
- Cladothrix** Nutt. Amarantaceae (3). 2 W. N. Am.
- Cladrastis** Rafin. Leguminosae (III. 1). 1 E. As., 1 E. N. Am. (cf. *Epi-gaea*) (*C. tinctoria* Rafin., yellow-wood); its wood yields a yellow dye.
- Clambus** Miers. Menispermaceae. 1 Mexico.
- Claoxylon** A. Juss. Euphorbiaceae (A. 11. 2). 60 palaeotrop.
- Clappia** A. Gray. Compositae (6). 2 Texas, Mexico.
- Clarionea** Lag. = *Perezia* Lag. p.p. (Compos.).
- Clarisia** Ruiz et Pav. Moraceae (11). 4 Peru, Brazil.
- Clarkeifedia** Kuntze (*Patrinia* p.p.). Valer. 1 Himalaya.
- Clarkella** Hook. f. Rubiaceae (1. 2). 1 Himalaya.
- Clarkia** Pursh. Onagraceae (2). 8 W. N. Am. Cult. orn. fl. Mech. of fl. as in *Epilobium*.
- Clary**, *Salvia pratensis* L.; wild- (W.I.), *Heliotropium*.
- Clastopus** Bunge ex Boiss. (*Vesicaria* B.H.). Cruc. (4). 3 Persia.
- Clathrate**, latticed.
- ClathrospERMUM** Planch. (*Popowia* EP.). Anon. (1). 12 trop. Afr.
- Clathrotropis** Harms (*Diplotropis* p.p.). Legum. (III. 1). 2 Braz.
- Clausena** Burm. f. Rutaceae (v). 20 palaeotrop. Some ed. fr.
- Clausia** Trotzky (*Hesperis* B.H.). Crucif. (4). 5 C. and N. As.
- Clavapetalum** Pulle (*Platea* p.p.). Icacinaceae. 1 Surinam.
- Clavate**, club-shaped.
- ClaviJa** Ruiz et Pav. Theophrastaceae. 40 trop. Am. Trees of palm-like habit, often with fls. on the old wood (cauliflory).
- Clavipodium** Desv. ex Gröning. Euphorb. (B. 11). 1 Austr.
- Clavistylus** J. J. Smith. Euphorb. (A. 11. 2). 1 Java.
- Claw**, a narrowed base of a petal, *Cheiranthus*, *Caryophyllac*.
- Claytonia** Gronov. ex L. Portulacaceae. 24 N. temp. and arctic; 2 nat. in Brit. No stips. Fls. in sympodial cymes. Before pollin. the fl.-stalk is erect; fl. protandr., with outward movement of the sta. after dehisc. Honey, at base of each petal, accessible to short-tongued insects. After pollin., the stalk bends down through 180°, to return once more to the erect position when fr. ripe. The caps. contains 3 seeds and splits into 3 valves, the seeds lying across the lines of splitting. The inner surfaces of the valves contract as they dry and shoot out the seeds (cf. *Buxus*, *Viola*).

- Cleanthe** Salisb. Iridaceae (11). 1 Cape Colony.
- Cleantes** D. Don (*Trixis* BH.). Compos. (12). 3 S. Braz., Arg.
- Clearing-nut**, *Strychnos potatorum* L. f.
- Clearweed** (Am.), *Pilea*.
- Cleavers**, *Galium Aparine* L.
- Cleft**, cut halfway down.
- Cleghornia** Wight (*Baissea* BH.). Apocyn. (11. 1). 4 Indomal.
- Cleidion** Blume. Euphorbiaceae (A. 11. 2). 18 trop.
- Cleisocratera** Korth. (*Psychotria* p.p. EP.). Rubi. (11. 5). 1 Borneo.
- Cleisostoma** Blume. Orchidaceae (11. 20). 20 Indomal.
- Cleistachne** Benth. Gramineae (2). 2 trop. As., Afr.
- Cleistanthus** Hook. f. ex Planch. Euphorb. (A. 1. 2). 40 palaeotrop.
- Cleistes** L. C. Rich. (*Pogonia* BH.). Orchid. (11. 2). 12 S. Am.
- Cleistochlamys** Oliv. Anonaceae (1). 1 Mozambique.
- Cleistogamy**, the production of closed self-pollinating fl., *Amphicarpaea*, *Cardamine*, *Commelina*, *Halenia*, *Lamium*, *Leersia*, *Lespedeza*, *Malpighia*, *Montia*, *Ononis*, *Oxalis*, *Parochetus*, *Viola*, esp. the last.
- Cleistoloranthus** Merrill. Loranth. (1). 1 Phil. Is.
- Cleistopholis** Pierre. Anonaceae (1). 5 trop. Afr.
- Clematicissus** Planch. (*Vitis* p.p.). Vitaceae. 1 W. Austr.
- Clematis** Dill. ex L. (incl. *Atragene* L.). Ranunculaceae (3). 220 cosmop. *C. vitalba* L. (traveller's joy) Brit. Mostly climbing shrubs with opp., usu. cpd., l. Lower sides of petioles sensitive to contact. The petiole bends once round the support, thickens and lignifies. Fls. in cymes; K coloured; no pets. or honey secretion. The style often remains persistent upon the fr. and becomes hairy, thus forming a mech. for wind-distr.
- Clematoclethra** Maxim. Dillen. (Ternstr. BH.). 10 China.
- Clemensia** Merrill. Meliaceae (11). 1 Phil. Is.
- Clementsia** Rose (*Sedum* p.p.). Crassulaceae. 1 Rocky Mts.
- Cleobula** Vell. Inc. sed. 1 Brazil.
- Cleobulia** Mart. Leguminosae (111. 10). 3 Brazil.
- Cleome** L. Capparidaceae (v). 70 trop., subtrop. Disc usu. more developed on post. side; may bear scales. Gynophore varies in length.
- Cleomella** DC. Capparidaceae (v). 10 N. Am.
- Cleomodendron** Pax. Capparidaceae (inc. sed.). 1 Somaliland.
- Cleonia** L. Labiatae (vi). 1 W. Medit.
- Clermontia** Gaudich. Campanulaceae (111). 12 Sandwich Is. The latex is used as bird lime. Some have ed. fr.
- Clerodendron** L. Verbenaceae (4). 150 trop., subtrop. *C. Thompsonae* Balf., often cult. orn. fl., has red K and white C. The sta. project so as to form the landing place for insects, and when they are ripe the style is bent down. Afterwards the sta. roll up and the style takes their place. *C. fistulosum* Becc. has hollow internodes inhabited by ants (myrmecophily, *q.v.*).
- Clethra** Gronov. Clethraceae. 12 trop., subtrop. Shrubs and trees with alt. l.; fls. in racemes or panicles, without bracteoles, ♀, reg. K 5, C 5, polypet.; A 5 + 5, hypog.; no disc; anthers bent outwards in bud; pollen in single grains; ov. 3-loc.; style with 3 stigmas. Caps.; endosp.

Clethraceae (*EP.*; *Ericaceae* p.p. *BH.*). Dicots. (Sympet. Ericales).

Only genus *Clethra*, *q.v.*

Clevelandia Greene ex Brandegee. Scroph. (III. 3). 1 Calif.

Cleyera DC. (*Eurya* Thunb. p.p. *EP.*). Theac. 9 warm Am., As.

Clianthus Banks et Soland. (*Donia* G. Don). Leguminosae (III. 6).

2 Austr., N.Z. Cult. orn. fl.

Clibadium L. Compositae (5). 15 trop. Am., W.I.

Clidemia D. Don (incl. *Sagraea EP.*). Melastom. (1). 100 trop. Am.

Ed. fr.

Cliff-brake (Am.), *Pellaea*.

Cliffortia L. Rosaceae (III. 5). 50 S. Afr.

Cliftonia Banks et Gaertn. f. Cyrillaceae. 1 S.E. U.S.

Climacorachis Hemsl et Rose. Leguminosae (III 7). 2 Mex.

Climbing fern (Am.), *Lygodium*; **-plants** abound in trop. forests, where they usu. grow large and woody (*lianes*), and are rarer elsewhere. Four chief groups: (1) **twiners**, whose tips nutate in search of support, Apios, Apocynaceae, Araliaceae, Aristolochiaceae, Basella, Bauhinia, Bignoniaceae, Bowiea, Calystegia, Camoensia, Ceropegia, Cassytha, Combretaceae, Connaraceae, Convolvulaceae, Cuscuta (sensitive stems, like tendrils), Cynanchum, Dipladenia, Freycinetia, Gnetum, Hoya, Ipomoea, Jasminum, Lardizabalaceae, Loasaceae, Lonicera, Lygodium, Malpighiaceae, Menispermaceae, Phaseolus, Phytocrene, Plumbago, Polygonum, Rhodochiton, Ruscus, Schizandra, Solanum, Tamus, Thunbergia, Wistaria; (2) **climbers with sensitive organs**, usu. *tendrils*, which may be modified *stems*, Antigonon, Landolphia, Passiflora, Vitis, *leaves*, Bignoniaceae, Cucurbitaceae, Cobaea, Corydalis, Leguminosae (Lathyrus, Vicia, &c.), Mutisia, *sensitive hooks* which clasp and become woody, Ancistrocladus, Artabotrys, Bauhinia, Gouania, Hugonia, Landolphia, Paullinia, Strychnos, Uncaria, Unona, Uvaria; *sensitive l.* occur in Gloriosa, Litonia, &c., *petioles* in Clematis, Dalbergia, Fumaria, Hablitzia, Maurandia, Rhodochiton, Tropaeolum, *midrib* in Nepenthes, *lat. branches* in Hippocratea, Macherium, Salacia, Securidaca, Uvaria; (3) **hook climbers**, sprawling, and catching by hooks (*cf.* above), Caesalpinia, Calamus, Capparis, Combretaceae, Desmoncus, Dipladenia, Galium, Hugonia, Lycium, Pereskia, Plectocomia, Smilax, Ventilago; (4) **root climbers** with special negatively heliotropic adv. r. that adhere to the support, Araceae, Araliaceae, Begonia, Bignoniaceae, Clusia, Ficus, Hedera, Hoya, Kendrickia, Norantea, Piper, Rhus, Salacia, Sapindaceae, Tecoma

Climbers are often of anatomical interest, presenting many abnormal features, esp. the trop. lianes. For details, see Darwin, *Climbing Plants*; Schenk, *Biologie und Anatomie der Lianen*.

Clinacanthus Nees. Acanthaceae (IV. B). 1 Malaya.

Clinandrium (orchids), anther-bed.

Clinogyne Salisb. Marantaceae. 20 trop. As. Afr.

Clinopodium L. = Calamintha Tourn. (*BH.*) = Satureia L. p.p.

Clinostigma Wendl. Palmaceae (IV. 1). 5 Samoa, New Hebrides, &c.

Clintonia Dougl. = Downingia Torr. (Campanul.).

Clintonia Rafin. Liliaceae (VII). 6 E. As., N. Am.

Clistax Mart. Acanthaceae (IV. B). 2 Brazil.

- Clistoyucca** Trel. (*Yucca* p.p.). Liliaceae (VI). 1 N. Am.
- Clitandra** Benth. Apocynaceae (I. 1). 20 W. and C. trop. Afr. Rubber is obtained from the r. of *C. Henriqueziana* K. Sch.
- Clitoria** L. Leguminosae (III. 10). 35 trop. and subtrop. Fls. inverted and the essential organs therefore touch an insect's back.
- Clivia** Lindl. Amaryllidaceae (I). 3 Cape Col. Cult. orn. fl.
- Cloezia** Brongn. et Gris. Myrtaceae (II. 1). 6 New Caled.
- Cloiselia** Sp. Moore. Compositae (12). 1 Madag. Tree.
- Clomenolepis** Cass. Compositae (inc. sed.). Nomen.
- Clonodia** Griseb. Malpighiaceae (II). 1 N. Brazil.
- Closia** Remy. Compositae (6). 5 Chili.
- Closing of fl.** in shade or cold, *Anagallis*, *Bellis*, *Calandrinia*, *Eschscholtzia*, *Paeonia*, *Tragopogon*.
- Clotbur** (Am.), *Xanthium*.
- Cloudberry**, *Rubus Chamaemorus* L.
- Clove gilliflower**, -pink, *Dianthus Caryophyllus* L., var.
- Clovenberry bush** (W.I.), *Samyda serrulata* L.
- Clover**, *Trifolium*; **bush** or **Japanese-**, *Lespedeza*.
- Cloves**, *Eugenia caryophyllata* Thunb., (W.I.) *Pimenta acris* Kostel.; **Madagascar-**, *Ravensara aromatica* Sonn.
- Clozelia** A. Chevalier (*Antrocaryon* Pierre). Anacardiaceae (2). 1 Ivory Coast.
- Clubmoss**, *Lycopodium*; -rush, *Scirpus*.
- Clusia** L. Guttiferae (V). 85 warm Am., mostly climbing epiph., clasping the host by anastomosing aerial r., and frequently strangling it (cf. *Ficus*). Fr. fleshy probably carried by birds.
- Clusiaceae** (Warming) = Guttiferae.
- Clusianthemum** Vieill. (*Garcinia* p.p. *BH.*). Guttif. (V). 2 New Caled.
- Clusiella** Planch. et Triana. Guttiferae (V). 1 Colombia.
- Cluster bean**, *Cyamopsis*; -pine, *Pinus Pinaster* Ait.
- Cluytia** Boerh. ex L. Euphorbiaceae (A. II. 5). 50 Afr., Arabia.
- Cluytiandra** Muell.-Arg. Euphorbiaceae (A. I. 1). 5 trop. Afr.
- Clybatis** Phil. (*Leuceria* p.p. *EP.*). Compos. (12). 1 Chili.
- Clypea** Blume = *Stephania* Lour. (Menisp.).
- Clypeate**, shield-shaped.
- Clypeola** L. Cruciferae (4). 12 Medit.
- Clytos oma** Miers (*Pithecoctenium* Mart. *BH.*). Bignoniaceae (1). 2 temp. S. Am. Cult. orn. fl., often under name *Bignonia*.
- Cnemidiscus** Pierre. Sapindaceae (1). 1 Cochinchina.
- Cnemidophacces** Rydb. (*Astragalus* p.p.). Legum. (III. 6). 1 N. Am.
- Cnemidostachys** Mart. = *Sebastiana* Spreng. p.p. (Euph.).
- Cneoraceae** (*EP.*; *Simarubaceae* p.p. *BH.*). Dicots. (Archichl. Geraniales). Only genus *Cneorum*, q.v. Near to Zygophyllaceae, but separated because only one whorl of sta. with no ligules, and no stipules, but oil-glands in the l.
- Cneoridium** Hook. f. Rutaceae (1). 1 S. Calif.
- Cneorum** L. Cneoraceae. 12 Medit., Canaries. Shrubs with alt. leathery exstip. l. with oil-glands; fl. sol. or in racemes, 3-4-merous, ♂, reg. with column or bolster-like disc. A 3-4, G (3-4), lobed, with 2 ov. in each; style 1. Schizocarp.

- Cnesmone** Blume. Euphorbiaceae (A. II. 2). 1 Indomal.
- Cnestidium** Planch. Connaraceae. 1 Panama.
- Cnestis** Juss. Connaraceae. 20 trop. Afr., As.
- Cnicothamnus** Griseb. Compositae (12). 1 Argentina.
- Cnicus** L. p.p. [*BH.* and others incl. *Cirsium*, making 120 *]. Compositae (11). 1 Medit. (*C. Benedictus* L., offic.). The genus is much confused with *Carduus* and *Cirsium*.
- Cnidium** Cusson (*Selinum BH.*). Umbellif. (III. 5). 20 N. palaeotemp.
- Cnidoscolus** Pohl. = *Jatropha* L. p.p. (Euphorb.).
- Coach whip**, *Fouquieria splendens* Engelm.
- Coadunate**, adnate, connate.
- Coarctate**, crowded together.
- Coaxana** Coulter et Rose. Umbellif. (III. 5). 1 Mexico.
- Cobaea** Cav. Polemoniaceae. 9 trop. Am. *C. scandens* Cav. cult. orn. climber of very rapid growth. It climbs by aid of tendrils (leaf-structures) which are much branched, the branches ending in sharp hooks. The tendril nutates with great rapidity and is highly sensitive to contact (as may be seen by rubbing one side and watching it for 5 min.); the hooks prevent the nutation from dragging away a branch before it has had time to clasp its support (Darwin, *Climbers*, p. 106). The closed bud stands erect on an erect stalk, but when going to open, the tip of the stalk bends over. Fl. very protandr. with movement of sta. and styles. At first greenish with unpleasant smell (fly-fl.), it becomes purple with pleasant honey-like smell (bee-fl.). Afterwards the stalk goes through several contortions (*cf.* *Linaria*).
- Cobnut**, *Corylus*, (W.I.) *Omphalea triandra* L.
- Cobresia** Pers. (*Kobresia* Willd.). Cyper. (III). 5 N. palaeotemp.
- Coburgia** Sweet = *Stenomesson* Herb. p.p. (Amaryll.).
- Coca**, *Erythroxylum Coca* Lam.; **cocaine**, ditto.
- Coccineus** (Lat.), scarlet.
- Coccinia** Wight et Arn. Cucurbitaceae (4). 20 trop. As. Afr. The fr. of *C. indica* W. and A. is eaten as a veg. in India.
- Coccoceras** Miq. Euphorbiaceae (A. II. 2). 3 Indomal.
- Coccocypselum** P. Br. Rubiac. (I. 7). 10 trop. Am. Heterostyled.
- Coccoderma** Miers. Menispermaceae. Nomen.
- Coccolochidion** K. Schum. Euphorb. (A. I. 1). 1 New Guinea.
- Coccoloba** L. (*Coccolobis* P. Br.). Polygonaceae (III. 1). 125 trop. and subtrop. Am. *C. uvifera* L., and others, ed. fr. (seaside grape).
- Cocconerion** Baill. Euphorb. (inc. sed.). 2 New Caled.
- Coccothrinax** Sargent. Palmaceae (I. 2). 10 warm Am.
- Coccul**, portion of a divided coccus.
- Cocculus** DC. Menispermaceae. 30 trop. and subtrop.
- Cocculus indicus**, *Anamiria Cocculus* Wight et Arn.
- Coccus**, a mericarp.
- Cochineal**, *Nopalea*, *Opuntia*.
- Cochlanthera** Choisy (*Clusia BH.*). Guttif. (v). 1 Venezuela.
- Cochlanthus** Balf. f. Asclepiadaceae (I). 1 Socotra.
- Cochlea**, a closely coiled legume.
- Cochlear**, spoon-shaped.

Cochlearia Tourn. ex L. Cruciferae (2). 20 Eur., As. Minor. *C. officinalis* L. (scurvy-grass) in Brit. with $\pm$ fleshy l., chiefly at the seaside and on mts. (*cf.* *Armeria*). The thick root of *C. Armoracia* L. (horse-radish) is a condiment.

Cochleate, coiled shell-shaped.

Cochlianthus Benth. Leguminosae (III. 10). 1 Nepal.

Cochlioda Lindl. Orchid. (II. 19). 5 trop. S. Am. Cult.

Cochliostema Lem. Commelinaceae. 1 Ecuador, *C. odoratissima* Lem., cult. orn. perf. fl. The filaments of the fertile sta. develop both lat. and beyond the anthers into large wings. Anther-loculi spiral.

Cochlospermaceae (*EP.*; *Bixineae* p.p. *BH.*). Dicot. (Archichl. Parietales). 3 gen., 18 sp. trop. Trees and shrubs usu. with lobed l. and racemose infl. of large φ , reg. or slightly $\cdot$ fl. K_4-5 , C_4-5 , A_∞ , $\underline{G}$ (3-5) with ∞ ov. in each on axile or parietal plac. Caps. Oily endosp.

Cochlospermum Kunth. Cochlospermaceae. 12 trop., mostly xero.; some have stout tuberous underground stems; many drop their l. and flower in the dry season. Some cult. orn.

Cochranea Miers. Boraginaceae (III). 10 Chili.

Cockburnia Balf. f. Globulariaceae. 1 Socotra.

Cockle (Am.), *Lychnis*; **-bur** (Am.), *Xanthium*.

Cock's comb, *Celosia cristata* L.; **-head** (W.I.), *Desmodium tortuosum* DC.; **-foot grass**, *Dactylis glomerata* L.; **-spur** (W.I.), *Pisonia aculeata* L.; **-spur thorn** (Ceylon), *Acacia eburnea* Willd.

Coco, *Colocasia antiquorum* Schott; **-de-mer**, *Lodoicea Seychellarum* Labill.; **-nut**, *Cocos nucifera* L., *Lodoicea*; **-plum**, *Chrysobalanus Icaco* L.; **water nut**, *Nipa fruticans* Thunb.; **-wood** (W.I.), *Inga vera* Willd.

Cocoa, *Theobroma Cacao* L., and other spp.

Cocops O. F. Cook. Palmaceae (IV. 2). 1 W. Indies.

Cocos L. Palmae (IV. 2). 60 trop., esp. *C. nucifera* L. (coconut), cult. throughout trop. It grows esp. well near to the sea, and its fibrous and woody fr. is capable of floating long distances uninjured, hence it forms a char. feature of marine island veg., and indeed probably became widely distr. in early times. It is a tall palm with large pinnate l. and a dense monoec. infl. The stem rarely stands vertically, but makes a gradual curve; this would appear to be due to heliotropism. Fr. large, one-seeded. The outer layer of the pericarp is fibrous, the inner very hard (the shell of the coconuts sold in shops). At the base are 3 marks, corresponding to the 3 loc. of the ovary, two of which have become obliterated. Under one of these is the embryo. The thin testa is lined with white endosp., enclosing a large cavity, partly filled with a milky fluid. This palm furnishes many of the necessities of life to the inhabitants of the tropics, and its products are largely exported from Ceylon, the Philippines, &c. The large l. are woven into cadjans for thatching, mats, baskets, &c.; their stalks and midribs make fences, brooms, yokes, and many other articles of furniture. The bud or "cabbage" at the apex of the stem makes an excellent vegetable and is made into pickles and preserves. When flowering the infl.-axis is tapped for toddy, a drink like the Mexican pulque (*cf.* *Agave*), containing sugar. Evap. of toddy

furnishes a sugar known as jaggery; its fermentation gives an alcoholic drink, from which distillation produces the strong spirit known as arrack, while further fermentation gives vinegar. The fr. while young contain a pint or more of a sweetish watery fluid, a refreshing drink; it decreases as the nut ripens. The kernels are eaten raw, or in curries, milk is expressed from them for flavouring, and oil is extracted by boiling or by pressure, in the latter case the kernels being first dried into what is known as copra. The refuse cake or poonac, left after the expression of the oil, is a valuable fattening food for cattle. The great use of the oil is for soap-making and margarine. In recent years a large industry has sprung up in desiccated coconut, largely used in confectionery, the kernel being sliced and dried in special desiccators. The outer wood of the stem (porcupine wood) is used for rafters, orn. articles, &c. The thick outer husk, rarely seen in Europe upon the nut, contains a large number of long stout fibres running lengthwise. The nut is placed in water till the soft tissues between these fibres decay, and the fibre (coir) is then beaten out; or sometimes the fibre is obtained by special machinery.

Cocos or **cocos wood**, *Brya Ebenus* DC.

Codia Forst. Cunoniaceae. 9 New Caledonia.

Codiaeum Rumph. ex A. Juss. Euphorb. (A. II. 5). 6 Indomal., Polynes., Austr. *C. variegatum* Blume cult., esp. in trop., for its coloured l.; usu. known as Crotons, and also used as hedges. Some have curious l., often twisted, or with two blades separated by a length of petiole.

Codlins and cream, *Epilobium hirsutum* L.

Codon L. Hydrophyllaceae. 3 S. Afr.

Codonacanthus Nees. Acanthaceae (IV. B). 2 Khasias, China.

Codonanthe Hanst. Gesneriaceae (I) 10 trop. Am.

Codonocarpus A. Cunn. ex Hook. (*Gyrostemon* Desf. EP.). Phytolaccaceae. 3 Austr.

Codonocephalum Fenzl. Compositae (4). 2 W. As.

Codonopsis Wall. Campanulaceae (I). 15 As. Cult. orn. fl.

Codonorchis Lindl. (*Pogonia* BH.). Orchid. (II. 2). 2 temp. Am.

Codonosiphon Schlechter. Orchid. (II. 16). 2 New Guinea.

Codonostigma Klotzsch (*Scyphogyne* BH.). Eric. (IV. 2). 1 S. Afr.

Codonura K. Schum. Apocynaceae (II. 1). 1 Cameroons.

Coelachne R. Br. Gramineae (9). 5 Indomal, China, Austr., Madag.

Coelachyrum Nees (*Eragrostis* p.p. BH.). Gram. (II). 2 S.W. As.

Coelanthum E. Mey. Aizoaceae (I). 2 S. Afr.

Coelarthron Hook. f. (*Andropogon* p.p. EP.). Gramin. (2). 1 Indomal.

Coelebogyne J. Sm = *Alchornea* Sw. p.p. (Euphorb.).

Coelia Lindl. Orchidaceae (II. 6). 5 trop. Am., W.I.

Coelidium Vog. Leguminosae (III. 3). 8 S. Afr.

Coelina Nor. Inc. sed. Nomen.

Coeliopsis Reichb. f. Orchid. (II. 13). 1 Panama.

Coelocarpum Balf. f. Verbenaceae (I). 2 Socotra, Madag.

Coelocaryon Warb. Myristicaceae. 5 trop. Afr.

Coelococcus H. Wendl. (*Metroxylon* p.p.). Palm. (III). 2 Polynes.

Coelodepas Hassk. Euphorbiaceae (A. II. 2). 5 Indomal.

- Coelodiscus** Baill. Euphorbiaceae (A. II. 2). 5 Indomal.
- Coeloglossum** Hartm. (*Habenaria* p.p. *BH.*). Orch. (II. 1). 2 N. temp.
- Coelogyne** Lindl. (*BH.* incl. *Pleione* D. Don). Orchidaceae (II. 3). 120 Indomal.
- Coelonema** Maxim. Cruciferae (4). 1 China.
- Coeloneurum** Radlk. Solanaceae (4). 2 San Domingo.
- Coelopleurum** Ledeb. (*Archangelica* *BH.*). Umbel. (III. 5). 6 N. Am., E. As.
- Coelopyrum** Jack. Inc. sed. 1 Malaya.
- Coelorachis** Brongn. (*Rottboellia* L.). Gram. (2). 7 N. Am.
- Coelospermous**, with boat-shaped seeds.
- Coelospermum** Blume. Rubiac. (II. 9). 12 Malaya, Austr., Polyn.
- Coelostegia** Benth. Bombacaceae. 3 Malaya.
- Coelostelma** Fourn. Asclepiadaceae (II. 4). 1 Brazil.
- Coemansia** March (*Pentapanax* p.p.). Araliac. (2). 1 Brazil.
- Coffea** L. Rubiaceae (II. 4). 45 palaeotrop., esp. Afr. *C. arabica* L. (Arabian coffee) largely cult. in S. Brazil, Java, Jamaica, and elsewhere, often under the shade of large trees. *C. liberica* Hiern (Liberian coffee) cult. usu. at lower elevations; its produce is not so good. Other sp. are also used. The fr. is a 2-seeded drupe, resembling a cherry. The pulp and the endocarp (which covers the two seeds like a layer of parchment) are mechanically removed. The seed, or coffee-bean, has a deep groove on the ventral side; by soaking it in water the endosperm is softened and the embryo may be dissected out. The stimulating property depends on the presence of the alkaloid caffeine. Coffee cultivation was from 1850 to 1880 the mainstay of Ceylon agriculture, but was killed out largely by the attacks of a fungus (*Hemileia vastatrix*) and the green bug. By far the largest cult. is that of Brazil, which in 1912 exported £45 million worth of coffee. (Raoul, *Culture du Caféier*, Paris.)
- Coffee**, *Coffea arabica* L., &c.; **Kentucky-**, *Gymnocladus*.
- Coffin nail**, *Anacardium occidentale* L.
- Cogniauxia** Baill. Cucurbitaceae (3). 4 trop. Afr.
- Cogswellia** Spreng. (*Peucedanum* p.p.). Umbelliferae (III. 6). 70 N. Am.
- Cogwood**, *Zizyphus chloroxylon* Oliv.; (W.I.), *Ceanothus*.
- Cohesion**, union of members of same whorl, e.g. petals.
- Cohnia** Kunth (*Cordylone* p.p. *BH.*). Lili. (VI). 3 Masc., New Caled. do. Reichb. f. = *Cohniella* Pfitz.
- Cohniella** Pfitz. (*Cohnia* Reichb. f.). Orchid. (II. 19). 1 C. Am.
- Cohort**, a group of allied fams., now termed an order.
- Cohosh** (Am.), *Cimicifuga*; **blue-**, *Caulophyllum*.
- Cohune nut**, *Attalea cohune* Mart.
- Coilochilus** Schlecht. Orchid. (II. 2). 1 New Caled.
- Coincya** Rouy (*Raphanus* p.p. *BH.*). Crucif. (2). 1 Spain.
- Coinochlamys** T. Anders. Loganiaceae. 5 W. Afr.
- Coir**, *Cocos nucifera* L.
- Coix** L. Gramineae (1). 6 India, China, esp. *C. Lachryma* L. (Job's tears) with inverted pear-shaped body at base of infl., the sheath of the br. of the infl., hollowed out and containing the 1-fl. ♀ spikelet;

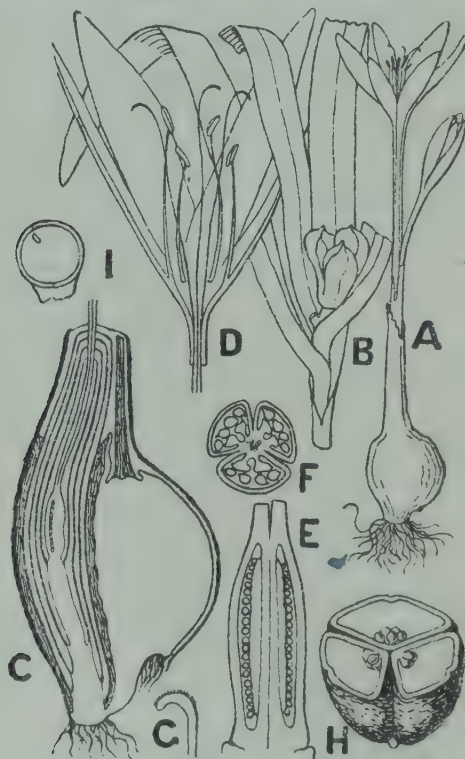
the ♂ project beyond the mouth; cult. for food in Khasia Hills and Burma; used in medicine in China.

Cola Schott et Endl. Sterculiaceae. 50 Afr. *C. vera* K. Schumann and *C. acuminata* Schott et Endl. (possibly identical) are the source of the kola nuts which form a principal article of trade in W. Africa. The nuts contain much caffein, and when chewed confer considerable power of sustaining fatigue; they are consequently a staple in the diet of the negroes (*cf.* Erythroxylon). The tree is as yet rarely cult., but is very common in W. Afr. The nuts are skinned after keeping • for a few days, and packed between l. to keep them damp.

Colax Lindl. (*Lycaste* Lindl. *BH.*). Orchidaceae (11. 14). 3 Brazil. Cult.

Colchicaceae (Warming) = Liliaceae (suborder 1).

Colchicum L. Liliaceae (1). 45 Eur., W. As., N. Afr. *C. autumnale* L. (autumn crocus or meadow saffron), Brit. Below the soil is a large corm (fig. and description of corm &c. below). In autumn the fl. projects out of the soil. The P-tube is long, and the ovary remains below ground, protected from cold, &c. The protog. fl. is visited by



A, pl. in fl. in autumn, $\times \frac{1}{2}$. B, l. and opening fr. in following summer, $\times \frac{1}{2}$. C, underground portion of flg. pl. cut lengthwise; the thick outer line repres. the brown membrane enveloping the whole; to the right is the corm formed from the base of last year's shoot, a withered portion remaining at the apex; to the left is the flg. axis, a lat. shoot from the base of the corm; from the base of the axis spring r. and above are the l., sheathing and foliage; the fl. arises in the axil of one of the uppermost foliage l., which will appear above ground with the fr. next spring, when the lower portion of the axis will swell to form a new corm. Reduced. D, section of upper part of fl. $\times \frac{1}{2}$. E, ovary cut lengthwise. F, cross-section ovary. G, a single stigma. H, cross-section fr. I, ditto seed. BEGHI after Berg and Schmidt. E to G, and I enlarged, $H \times \frac{1}{2}$.

bees. In spring the l. appear and the capsule is brought above ground by the lengthening of its stalk. The seeds and corms are used in medicine, in gout.

Coldenia L. Boraginaceae (II). 15 trop., subtrop.

Colea Boj. Bignoniaceae (4). 18 Madag., Masc.

Coleanthera Stschegl. Epacridaceae (3). 3 W. Austr.

Coleanthus Seidl. Gramineae (8). 1 N. temp.

Colebrookea Sm. Labiatae (VI). 1 India. —

Coleocoma F. Muell. Compositae (4). 1 trop. Austr.

Coleogyne Torr. Rosaceae (III. 3). 1 California.

Coleonema Bartl. et Wendl. Rutaceae (I). 5 S. Afr.

Coleosanthus Cass. = *Brickellia* Ell. (Compos.).

Coleospadix Becc. (*Ptychosperma* EP.). Palm. (IV. 1). 2 New Guin.

Coleostachys A. Juss. Malpighiaceae (II). 1 N. S. Am.

Coleotrype C. B. Clarke. Commelin. 3 S.E. Afr., Madag.

Coleus Lour. Labiatae (VII). 150 palaeotrop. Many forms and hybrids with varieg. and coloured leaves, cult. *C. elongatus* Trimen is a peculiar sp. found only on the top of one mountain in Ceylon, and must have arisen by mutation (*Ann. Perad.* IV. 1).

Colic-root (Am.), *Aletris*.

Colignonia Endl. Nyctaginaceae. 7 Andes.

Collabium Blume. Orchidaceae (II. a. II). 3 Malaya.

Colladonia DC. = *Prangos* Lindl. p.p. (Umbellif.).

Collaea DC. = *Galactia* P. Br. p.p. (Legum.).

Collar, junction of root and shoot.

Collards (Am.), a form of cabbage.

Collateral branches, buds, cf. Buds.

Collecting (notes for field botanists, travellers and collectors).

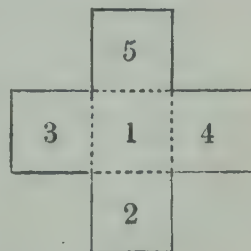
OUTFIT. Any or all of the following may be needed, according to the places to be visited, and the kind of work to be done. All that is needed should be taken from the start, as it is usually difficult to get suitable things quickly elsewhere; extra supplies of paper, &c. may be sent to the "Poste restante" at places to be visited en route.

Portfolios for pressing plants as collected, lightly made of two strong cloth-covered pasteboards (17 in. × 11 in.) with encircling straps and handle, and to contain 30—50 sheets of paper. Specimens as collected are put at once into these, and time is thus saved in making large collections, e.g. on a journey in new country.

Collecting tins or vasculums of various sizes for bringing plants home for further study. When slung on the back, the hinges should be on the lower side of the lid, and the bolt should slide downwards to fasten, otherwise it is liable to work loose. Small specimens are best carried in *small round-cornered tobacco or tooth-powder tins*, not among large ones in a general vasculum.

Presses for drying pl.; each of two outer frames of $\frac{1}{4}$ inch iron rod $17\frac{1}{2} \times 11\frac{1}{2}$ inches, filled in with stout wire netting soldered to the iron.

The papers lie between these frames and the whole is strapped with two stout straps to obtain the pressure.



Lattices, 17×11 inches, for admitting air between the masses of plants in the press, made of two sets of parallel thin laths fastened together.

Drying paper in sheets 17×11 inches in ample quantity; stout Manila is best, blotting paper is too fragile. *Mounting paper* in sheets $16\frac{1}{2} \times 10\frac{1}{2}$ inches (standard size of Kew herbarium) or sheets of newspaper or other common paper for preservation of dry specimens removed from the press. Unfolded *envelopes* of thin paper cut into the shape shown, for seeds, flowers, &c.; place the specimen on 1 and fold over the wings 2, 3, 4, 5 in order. 2 must be the same size as 1.

Waxcloth for tying up bundles of dried and mounted specimens; *waterproof canvas* for covers for presses, &c. in case of rain.

Corrosive sublimate (mercuric chloride) and *alcohol* for poisoning specimens; made up as required in the proportion of 1 part to 50. Large *dish* for poisoning. *Naphthalin* for keeping away insects.

Kerosine tins or other square tins with large lids for preserving specimens in alcohol (lids that push in airtight, as in many tobacco tins, are the best); *soldering apparatus* for fastening up when full.

Bottles with stoppers for preserving delicate specimens; neckless *glass tubes*, with corks, of various sizes. Bottles are easily packed in joints of bamboo, tubes in small tins.

Muslin for wrapping alcohol specimens. Each should be wrapped with its label (in Indian ink, or better on metal) in a piece of muslin and packed in the tin; specimens cannot then become mixed together, and can be closely packed.

Alcohol for preserving; ordinary methylated spirit is best for most things, but some require 70 % alcohol, and some absolute alcohol.

Formalin, *picric acid*, *chromic acid*, *glycerin*, or other preservatives.

Butterfly-net, *killing-bottle*, *insect boxes*, *entomological pins*, if ecological work is to be done.

Hunting-knife, cutlass, or kukri for lopping creepers, &c.; *pruning shears* for cutting branches; strong *pocket knives*; strong narrow-bladed *trowels*; *geological hammer*; strong *rope* for climbing, &c.

Travelling microscope and *lenses*; *dissecting microscope*; *pocket lenses*; *microscope slides*; *cover-slips* in alcohol or oil; *scalpels*; *dissecting needles*; *scissors* large and small and with fine points; *razors* for section-cutting; *forceps*; *dishes*; *watch-glasses*; *camel-hair brushes*.

Reagents and *mountants* for simple microscopic work, e.g. iodine, glycerine, haematoxylin, gold-size, canada balsam in xylol, alcohol, oil of cloves.

Compass (prismatic by preference); *spirit-level*; *aneroid barometer*; *thermometers* (ordinary, maximum and minimum, wet and dry bulb); *field glass* (very useful for studying cliffs, ravines, trees, &c.); *maps* (geographical, geological, outlines for marking distribution, &c.).

Photographic camera and *lenses*; *tripod*; *films* or *plates* in soldered tins; *chemicals* and *dishes* for developing, fixing, &c.

Drawing pencils (hard, medium, soft); *drawing cards*; *sketch-block*; *colours*; *brushes*; *india-rubber*; *ink*; *compasses*; *ruler*; *scales* in inches and centimetres; *gum* and *brush*; *pins*; *pens*; *pencils*; *stylograph*.

Spirit-lamp; *tape-measure*; *string*, *twine* and *thread*; *thin wire*; *sheet-lead* or *zinc* for labels (if latter, also solution of platinic chloride for writing on it); *glue-pot* and *glue* for mounting.

Note-books with numbered detachable pages, so that the descr. of each specimen can be separated; consecutively numbered and perforated *labels* for specimens, the numbers to correspond to those in note-book. The labels may be joined to the pages or in sheets like postage stamps. More than one of each number will usu. be needed.

COLLECTING AND PRESERVING. The following hints will be found useful.

Decide the general object of the work in advance, and collect principally for the furtherance of that object.

In collecting for subsequent distr., collect enough specimens to go round, but do not seriously diminish a plant in its native locality.

Do not collect immediately on arrival; first become familiar with the plants and their local features and distribution. Better results are obtained by choosing certain localities as headquarters and working these thoroughly, than by rushing through a large district.

Do not collect herbarium material in wet weather.

Collect specimens which are as typical as possible, but also take some illustrating the range of variation, the difference of habit and size on different soils or situations, &c.

Collect entire pl. if possible, incl. r. In shrubs or trees, twigs with l. in all stages, portions of stem-bark and anything else necessary for a complete descr. Do not forget rad. l., buds, fl., ripe and unripe fr., seeds.

If a large collection is being made, it is quicker to use the portfolio than the vasculum, and to press each specimen as soon as obtained.

Large flowers or heads (*e.g.* thistles), fruits, roots, tubers, &c. may be sliced in half before pressing, or the surface only sliced off. Notes and sketches should be made of the original appearance.

L. of Conifers, Heaths, Succulents, &c. fall when dried, unless previously immersed a few seconds in boiling water. Do not immerse fl.

Thorny and prickly plants should first be placed between boards and pressed down with the feet; the prickles would otherwise tear the papers.

Delicate water plants should be arranged upon sheets of white paper under water, and always remain on these sheets while drying.

It saves time in drying delicate specimens to keep each always in a folded sheet of very thin paper.

Place extra fl., small fragments, seeds, &c., in small envelopes, numbered to correspond with the specimens; do not have any small parts loose, or confusion may result.

Place all specimens in the press the day they are collected. Withered plants may be soaked in water; if the stem be cut 2—3 in. above the former cut and *under* water it will often revive quickly.

Label every specimen with its consecutive number in such a way that the number cannot be lost. Punched labels are best, tied on with thread. See that all envelopes, &c. have the same number.

Spread out the specimens naturally. If many l. &c. overlap, place bits of drying paper between. If stems have to be cut, mark the corresponding ends by stars on the paper. Spread out some fl., leave others unspread, and divide some in the antero-post. plane. Divide some fr. lengthwise and crosswise.

Arrange the specimens on the sheets so that they form a steady pile without lumps in the middle. Place a lattice upon every five inches of specimens. When all are ready place in the press and draw the straps as tight as possible, or better, place about 10 lbs. weight upon it. Tighten the straps as the plants shrink.

Change drying papers at least once daily: dry used paper in the sun or by the fire; use warm driers where possible. See that petals, &c. do not stick to the paper: if necessary put slips of tissue paper under.

In changing the papers, put the outer specimens inside, so that all shall dry evenly. Drying should be as rapid as possible to prevent loss of colour, blackening, &c.

Fully dried plants no longer feel cold on the cheek, and are stiff and brittle.

Dried specimens should be poisoned by a brief immersion in 2% solution of mercuric chloride in alcohol. They should then be dried in the air, mounted (with glue) or laid between sheets of paper, and tied up in wax-cloth with a little naphthalin to keep out insects.

Material for subsequent microscopic examination or for museums must usu. be preserved in alcohol. Cut into small portions, attach label (best of zinc written on with solution of platinic chloride, but paper and pencil or Indian ink will do temporarily); place in methylated spirit for a few days, wrapped in muslin, and finally preserve in large tin. A few inches of spirit at the bottom, enough to keep all specimens moist when the tin is soldered, will suffice for most material. Specimens for embryological, delicate histological, cytological, and other investigations, and delicate plants or organs, must be separately preserved from the first in absolute alcohol in bottles or tubes. Labels should be put inside these. Contents of bottles may be written on the ground surface of the stoppers, so as to be legible through the neck.

Museum material may also be preserved in formalin (1 part of ordinary solution to 10 or more of water). Some special preservatives, *e.g.* picric and chromic acids, are used in special cases.

Specimens illustrative of economic uses of plants and their products should be collected in less known districts, *e.g.* samples of gums, resins, caoutchoucs, oils, fibres, timbers (portions of trunks, or slabs 8 × 4 × 4 inches), food-products, drugs, dyes, tans, &c. In all cases the exact origin should be verified, and herbarium specimens taken, bearing numbers to correspond with those placed on the products.

From less known countries, endeavour to bring back living seeds (ripe, well dried, dry in canvas bags, or packed in charcoal in tins if to be long kept), bulbs and tubers (gathered when dry and with withered leaves), succulent plants (gathered dry and loosely packed), living plants (planted in earth in Wardian cases or sometimes in bamboo pots, if possible some weeks before moving). Cuttings may sometimes be brought in oiled silk wrappers; pseudobulbs in boxes with air-holes; tree ferns with the fronds removed, and a ball of earth round the root.

RECORDING. The following hints are worth noting.

Make all notes immediately upon observation of the facts; never trust to memory, nor delay recording.

Make all notes about individual specimens upon detachable sheets,

numbered to correspond with the specimens; never describe two or more on the same sheet; never use the same number twice.

Make no record till satisfied of its truth and accuracy.

Accompany all notes with maps, drawings, sketches, or photographs as far as possible.

Sketch and photograph all peculiarities of habit, characteristic forms of vegetation, and other features of interest. Mark all plants in such pictures with numbers corresponding to their numbers in your collection, and write a full description of each picture before leaving the spot. If a photograph is taken, make a rough sketch (from the picture on the focussing screen or finder) of the scene and put numbers to the plants.

Label all specimens as collected with consecutive numbers, and subsequently with permanent labels (about 3×2 inches) giving name of herbarium, collection, tour or district in which they were collected, date, locality, and collector, as well as the number.

As each specimen is gathered, record date, exact locality, elevation above sea, habit, colour of fl. and fr., scent, presence or absence of honey, floral mechanism, insect visits, and any other features and facts that cannot be ascertained from the specimens preserved.

Note the comparative frequency of each species, the kind of situation and soil it affects, and the species with which it is found in association.

Endeavour to note the chief general forms of vegetation and the local grouping of pl. in districts studied. Pay special attention to ecological and geographical questions.

Record native names (question several different persons before deciding), economic uses, and points of general or ethnological interest.

Further details of the subjects treated in this section may be found in *Hints for Collectors* (Kew Bulletin, 1914, p. 97), the *Admiralty Manual of Scientific Enquiry*, Dammer's *Handbuch für Pflanzensammeler*, Stuttgart, 1891, Asa Gray's *Structural Botany*, &c.

Collective (fr.), resulting from several fl., *Ficus*, *Morus*, *Platanus*.

Collet, collar.

Coileters, glandular hairs.

Colletia Comm. ex Juss. Rhamnaceae. 15 S. Am. Habit peculiar; in each axil are 2 serial buds; the upper gives a triangular thorn, the lower fls. or a branch of unlimited growth.

Colliguaja Molina. Euphorbiaceae (A. 11. 7). 6 temp. S. Am.

Collinsia Nutt. Scrophul. (11. 4). 25 N. Am., often cult. orn. fl. The fl. resembles, in shape and mech., that of Leguminosae.

Collinsonia L. Labiatae (VI). 2 Atl. N. Am.

Collinus (Lat.), on low hills.

Collococcus P. Br. Inc. sed. Nomen.

Collomia Nutt. Polemoniaceae. 20 W. Am. The seed coat has a covering of cells with mucilaginous walls which swell when wetted (*cf.* *Brassica*, *Linum*, &c.). Cult. orn. fl.

Collyris Vahl = *Dischidia* R. Br. (Asclep.).

Colmeiroa F. Muell. Saxifragaceae (v). 1 Lord Howe I.

Colobanthus Bartl. Caryophyllaceae (I. 1). 15 S. Am., Austr., N.Z. Petals 0. Sta. in one whorl.

Colocasia Schott. Araceae (VI). 8 Indomal. Tuberous herbs or small shrubs. Monoec. Sta. in synandria. *C. antiquorum* Schott (taro,

- coco, or scratch-coco), cult. in trop. for its rhiz., which when boiled loses its poisonous nature and forms valuable food.
- Colocynth**, *Citrullus Colocynthis* Schrad.
- Colocynthis** (Tourn.) L. = *Citrullus* Neck. (Cucurb.).
- Cologania** Kunth (*Amphicarpaea* EP.). Legum. (III. 10). 30 Am., As.
- Colonist**, weed of cult. land, rare elsewhere.
- Colophony**, a form of resin.
- Coloptera** Coulter et Rose. Umbell. (III. 6). 3 N.W. U.S.
- Colosanthra** Pohl. Inc. sed. Nomen.
- Colour**, change in fl., cf. Change; **of young** 1., *Amherstia*, *Brownea*, *Cinnamomum*, *Dryobalanops*, *Haematoxylon*.
- Colpias** E. Mey. Scrophulariaceae (II. 3). 1 S. Afr.
- Colpodium** Trin. Gramineae (10). 12 N. temp.
- Colpoon** Berg. Santalaceae. 3 S. Afr.
- Colpothrinax** Griseb. et H. Wendl. Palm. (I. 2). 1 Cuba.
- Colquhounia** Wall. Labiatae (VI). 5 Indomal.
- Colt's foot**, *Tussilago Farfara* L.; (W.I.) *Piper umbellatum* L.
- Colubrina** Rich. ex Brongn. Rhamnaceae. 20 trop., subtrop.
- Columbaria** J. et C. Presl = *Scabiosa* Tourn. (Dipsac.).
- Columbia** Pers. Tiliaceae. 15 trop. As.
- Columbine**, *Aquilegia vulgaris* L.
- Columella**, central axis of fr., *Geranium*, *Thuja*.
- Columellia** Ruiz et Pav. Columell. 3 N. Andes. Shrubs with evergr. opp. exstip. l. Fls. in cymes, ♀, nearly reg. K 5, C (5), A 2, short and thick with irreg. broad connective and 1 twisted pollen sac. No disc. $\overline{G}$ (2), imperfectly 2-loc.; ov. ∞ , anatr.; style short and thick with broad 2—4-lobed stigma. Caps., enclosed in K. Endosp.
- Columelliaceae**. Dicots. (Sympet. Tubiflorae; Personales BH.). Only genus *Columellia* (g.v.). [Van Tieghem, *Ann. Sc. Nat.* 8. xviii. 155.]
- Column**, cf. Orchidaceae.
- Columnnea** Plum. ex L. Gesneraceae (1). 75 trop. Am., several climbers and epiphytes. Anisophylly is frequent.
- Columniferae** (Warming). The 12th cohort of Choripetalae.
- Coluria** R. Br. Rosaceae (III. 2). 4 Siberia, China.
- Colutea** (Tourn.) L. Leguminosae (III. 6). 12 S. Eur. to Himal. *C. arborescens* L. (bladder-senna) cult. Its l. have similar properties to senna (*Cassia*) and are used to adulterate the latter. The pods are inflated and burst on being squeezed.
- Coluteocarpus** Boiss. Cruciferae (2). 1 W. As. Mts.
- Colvillea** Boj. ex Hook. Leguminosae (II. 7). 1 Madag.
- Colza**, *Brassica Napus* L.
- Coma**, a tuft of hairs.
- Comandra** Nutt. Santalaceae. 4 Eur., N. Am.
- Comanthosphace** Sp. Moore. Labiatae (VI). 4 Japan.
- Comarella** Rydberg (*Potentilla* p.p.). Rosac. (III. 2). 2 N. Am.
- Comarobatia** Greene (*Rubus* p.p.). Rosac. (III. 2). 1 N.W. Am.
- Comarostaphylis** Zucc. = *Arctostaphylos* Adans. p.p. (Eric.).
- Comarum** L. = *Potentilla* L. (Rosac.).
- Combretaceae** (EP., BH.). Dicots. (Archichl. Myrtiflorae; Myrtales BH.). 16 gen., 450 sp. trop. and subtrop. Trees and shrubs with

alt. or opp. simple l. and no stips.; many climbers, some twining, some with hooks formed of the persistent bases of the petioles. Fls. usually sessile in racemose infls., ♂, reg. Typical formula: $K\ 5, C\ 5, A\ 5+5, \bar{G}\ 1\text{-loc.};$ ov. 2—5, anatr., pend.; style simple. There is a disc on the summit of the ovary, sometimes with various outgrowths. Fr. dry, 1-seeded, often winged at the angles. Seed exalb.; cotyledons usu. twisted spirally. *Chief genera*: Terminalia, Combretum, Quisqualis.

Combretocarpus Hook. f. Rhizophoraceae. 1 Borneo.

Combretodendron A. Chevalier. Combretaceae. 1 trop. Afr.

Combretopsis K. Schum. (*Lophopyxis* Hk. f.). Icac. 1 New Guin.

Combretum L. Combretaceae. 330 trop. and subtrop., exc. Austr. and Polynes. The fruit of *C. butyrosom* Tal. (trop. Afr.) yields a butter-like substance known as Chiquito, used as butter.

Comesperma Labill. (*Bredemeyera* p.p. *EP.*). Polygal. 25 Austr.

Cometes L. Caryophyllaceae (1. 6). 2 W. As.

Cometia Thou. Euphorbiaceae (A. 1. 1). 2 Madag.

Comfrey, *Symphytum officinale* L.

Cominsia Hemsl. Marantaceae. 2 Austr., Solomon Is.

Commelina L. Commelinaceae. 110 trop. *C. coelestis* Willd. cult. orn. fl. In the fl. there is division of labour between the sta. (*cf.* Heeria). The fl. stands horizontally and the sta. and style project beyond the C. The upper 3 sta. (in many sp.) are almost sterile, but the lobes are juicy. The two lat. lower sta. and the median one are fully fertile. Bees often climb up and pierce the upper anthers for honey. *C. benghalensis* L. has subterranean cleistogamic fls. The rhizome of some sp. is edible.

Commelinaceae (*EP.*, *BH.*). Monocots. (Farinosae; Coronarieae *BH.*). 25 gen., 300 sp., mostly trop. and subtrop. herbs with jointed stems and alt. sheathing l. Infl. usu. a cincinnus of the Boraginaceae type. Fl. ♂, usu. reg., commonly blue. Typical formula $K\ 3, C\ 3, A\ 3+3, \bar{G}\ (3),$ but some sta. commonly absent or stds. K and C differ in colour and texture. Ov. 3-loc., with a few orthotr. ov. in each. Caps. loculic. or indeh. Endosp. fleshy; seed often arillate. *Chief genera*: Commelina, Tradescantia.

Commensalism, living together for mutual benefit.

Commersonia Forst. Sterculiaceae. 10 trop. As., Austr.

Commersorchis Thou. Orchidaceae (inc. sed.). 1 Mascarenes.

Commicarpus Standley (*Boerhaavia* p.p.). • Nyctag. 2 N. Am., W.I.

Commidendron Burch. Compositae (3). 5 St Helena. *C. gummi-ferum* DC. yields a gum.

Commiphora Jacq. (*Balsamodendron* Kunth). Burseraceae. 80 trop. As., Afr. Several spp. yield myrrh. The resin exudes from the tree and collects in lumps. It is used in medicine and in incense, &c. *C. opobalsamum* Engl. is said to yield the resin balm of Gilead. Other sp. yield bdellium and other resins.

Commissure (Umbelliferae), face by which carpels cohere.

Common receptacle, the receptacle of all fl. on a head.

Communis (Lat.), social, general.

Community (Cl.), a mixture of individuals of 2 or more spp.

Comociadia P. Br. Anacardiaceae (3). 15 W.I., C. Am.

Comolia DC. Melastomaceae (I). 20 S. Am.

Comomyrsine Hook. f. (*Weigeltia* p.p. *EP.*). Myrsin. (II). 4 S. Am.

Comopycna O. Ktze. = *Pycnocomma* Benth. (Euphorb.).

Comoroa Oliv. (*Teclea* p.p. *EP.*). Rutaceae (IV). 1 Comoro Is.

Comose, hairy in tufts.

Comostemum Nees = *Androtrichum* Brongn. (Cyper.).

Comparetia Poepp. et Endl. Orchidaceae (II. 19). 5 trop. Am. Cult.

Compass-plants, *Silphium laciniatum* L., *Lactuca Scariola* L.

Comperia C. Koch (*Orchis* BH.). Orchid. (II. 1). 1 S.E. Eur.

Compital, where veins intersect at an angle.

Complanate, flattened.

Complete (fl.), with two whorls of perianth.

Complicate, folded on itself.

Compositae (*EP.*, *BH.*). Dicots. (Sympet. Campanulatae; Asterales *BH.*). The largest fam. of flg. pl., comprising about 900 genera, with over 13,000 sp.—more than 10% of the total. They are distr. over the greater part of the earth. Although so large a fam. they are well marked in their characters and cannot be confounded with any other, though they have a superficial likeness to Dipsaceae and Calyceraceae.

Living in almost every conceivable situation, they present great variety in veg. habit, often within a single genus, *e.g.* *Senecio* (*q.v.*). Water and marsh plants and climbers are rare, and so also are epiphytes. This latter is interesting, for the distr. mech. of these pl. is admirably suited to an epiph. existence, and xero. is not uncommon. The enormous majority are herbaceous pl.; trees and shrubs are comparatively rare (about 1½%). It is worthy of note that the latter often form an important feature in the Composite flora of oceanic islands (see Wallace's *Island Life*).

L. usu. alt., frequently rad., opp. in Heliantheae, whorled in a few cases, *e.g.* *Zinnia verticillata*; stips. rarely present. R. usu. a tap-root, sometimes tuberous as in *Dahlia*, &c., often thickened like that of a carrot, *e.g.* *Taraxacum*, *Cichorium*, &c. For details of veg. organs refer to individual gen.; *e.g.* *Aster*, *Barnadesia*, *Bellis*, *Bidens*, *Cichorium*, *Dahlia*, *Espeletia*, *Gnaphalium*, *Helianthus*, *Helichrysum*, *Lactuca*, *Mutisia*, *Petasites*, *Senecio*, *Silphium*, *Taraxacum*, &c. All tribes exc. 12 and 13 contain oil-passages in the root, stem, &c. In 13 (*Cichorieae*), laticiferous vessels are present, commonly containing a milky white latex (*e.g.* lettuce, dandelion).

Infl. of racemose type, the fls. arranged in heads (*capitula*), or rarely in spikes. These heads are again arranged in many cases into larger infls.—racemes, corymbs, &c., or even into cpd. heads (*Echinops*, &c.). In this last case, however, the smaller heads contain only one fl. each. Head surrounded by an invol. of bracts, usu. green, which performs for all the fls. of the head the functions that in most plants are performed by the calices of the individual fls., viz. protection of the bud and of the young fr. Fls. arranged upon a common receptacle—the enlarged end of the axis—of various shapes, most frequently flat, slightly convex or even spindle-shaped.

The shape and surface-condition of the receptacle are chars. of

importance in classification of the fam. It may be smooth or hairy, &c.; there may (Helianthus, &c.) or may not (Calendula, &c.) be, upon it, scaly br. belonging to the individual flrs. In Cynareae these br. are divided so as to form numerous bristles.

In the simplest case the fls. of a single head are all alike and ♀, but there are many deviations from this type. The fls. may be all actinomorphic (*tubular*) or all ♂ (*ligulate*); see below. Very commonly however, as in daisy or sunflower, there is a distinction into a *disc* of actinomorphic fls., and a marginal *ray* of ♂ fls. Or, as in *Centaurea* sp., the outer florets may be actinomorphic but different in size from the central. The number of ray-florets varies in different sp., but according to definite rules.

The *distribution of sexes* among the fls. of a head varies much. The most common case is gynomonoecism, the ray-florets ♀, the disc ♂. The very large ray-florets of *Centaurea* sp. and others are completely sterile (*cf.* *Hydrangea*, *Viburnum*, &c.). *Cf.* also *Tussilago*, *Petasites*, &c.

The *flower* is fully epig., usu. 5-merous. K absent in *Ambrosia* and its allies, *Siegesbeckia*, &c.; in some cases it appears only as a slightly 5-lobed rim upon the top of the inf. ovary (*cf.* *Rubiaceae* and *Umbelliferae*); usu. it takes the form of hairs or bristles—the *pappus*—and enlarges after fert. into a parachute (*Dandelion*) or into hooked bristles (*Bidens*) to aid in distr. (see below). C (5), valvate in bud; actinom. (tubular) or ♂. Of the latter form there are two varieties, labiate (lipped) and ligulate (strap-shaped). The latter term, strictly speaking, should be applied to those corollas which are strap-shaped in form with 5 teeth at the end repres. the petals, but is usu. also given to those lipped forms where the lower lip is strap-shaped and ends in 3 teeth. Sta. 5, epipet. with short filaments, alt. with the petals. Anthers intr., cohering by their edges (*syngenesious*), forming a tube around the style (*cf.* *Lobelia*). $\overline{G}$ (2), with a simple style that forks at the end into two stigmas, an ant. and a post. (see diagram). The construction of the style and stigma is of importance in the classification. There is often a brush of hairs on the style below the stigmas. Only the inner (upper) surfaces of the stigmas are as a rule receptive to pollen. Ovary 1-loc. with 1 erect, basal, anatropous ov., which gives an exalb. seed with straight embryo, enclosed in the dry indeh. pericarp. This fr. is usu. termed an achene, but of course is, if one adhere strictly to definitions, a pseudo-nut, as its pericarp is partly axial, and there is > one cpl. It is often crowned with a pappus (see below).



Floral Diagram of Composite fl. with pappus (after Eichler). The small outer lines represent the pappus-bristles.

Natural History of the Flower. Being massed together in heads, the individual fls. may be, and usu. are, comparatively very small, and the advantage is gained that a single insect visitor may fert. many fls. in a short time without having to fly from one to the other, while there is no loss of conspicuousness, and a considerable saving

of corolla-material, &c. Throughout the fam., the same type of mech. of the individual fl. is found, the differences being slight and unimportant. It is simple, but effective. Honey is secreted by a ring-shaped nectary round the base of the style, and protected from rain and from short-lipped insects by the tube of the C. The depth of the tube varies within fairly wide limits, but is never so small as to permit the shortest-lipped insects to obtain the honey. As a fam., the C. all belong to Müller's fl. class B', but there is considerable variety in the depth of tube, &c., and therefore also in the composition of the group of visiting insects to each. Thus the long-tubed purple-flowered *Centaureas*, &c. are mainly visited by bees and *Lepidoptera*, while the short-tubed yellow *Leontodons* or white *Achilleas* are visited mainly by flies.

At the time when the fl. opens, the style, with its stigmas tightly closed against one another, is comparatively short, reaching up to, or projecting a small distance into, the anther tube. The pollen is shed into this, and as the style grows it presses the pollen little by little out at the upper end of the tube where it will come into contact with visiting insects. At last the style itself emerges and the stigmas separate. The fl. is now ♀. Finally, in a great many cases, the stigmas curl so far back that they touch the pollen upon their own style, so that every fl. is certain to set seed, even though it be by self-fert. In a few cases, *e.g.* *Senecio vulgaris*, insect visitors are very rare, and the fl. depends entirely on self-fert. The mech. is about the simplest and most perfect that exists for attaining the desired ends. A striking contrast is seen in the orchids; they have bizarre fls. with most elaborate mechs., and an enormous number of seeds in every caps. An interesting modification of the mech. is found in *Cynareae* (see *Centaurea*) where the sta. are irritable. See also *Artemisia* (wind-fert.).

The invol. bracts, or ray-florets, or both, often close up over the central fls. in cold or wet weather, thus protecting the fls.

Natural History of the Fruit. The ripening fr.-head is generally protected from injury by the invol. bracts, which bend inwards over it, performing the function of a K. The calices of the individual fls. are thus rendered useless in this respect and are, in most C., used for purposes of distr. of the fr. In most cases, the K, after the fert. of the fl., grows into the familiar pappus, as seen in dandelions or thistles, usu. composed of fine hairs, often branched, but in some cases, *e.g.* *Achyrachaena*, leafy and membranous. The hairs are hygroscopic and spread out in dry air; this often helps to lever the fr. off the receptacle. In *Adenostemma* the pappus is sticky. In *Bidens* and others the pappus is formed of stout barbed bristles; the fr. adheres to animals. In *Arctium* the invol. br. become hooked at the tips and cling to animals. In *Xanthium* the recept. is provided with hooks. In *Siegesbeckia* the bracts are sticky. A few genera, *e.g.* *Helianthus*, *Bellis*, &c., have no special arrangements at all, and the frs. remain upon the common receptacle till jerked off by wind or otherwise.

General Considerations. The C. are generally regarded as occupying the highest position in the Veg. Kingdom. Their success

may be put down perhaps to the concurrence of several useful peculiarities, viz.

- (1) the massing of the fls. in heads, surrounded by invol. bracts: from this there results
 - (a) greater conspicuousness, especially when ray-florets are developed; (b) a saving of material in the corollas, &c.; (c) the fact that one insect visitor may fertilise many fls. in a short time without having to fly from one to another;
- (2) the very simple and effective floral mechanism, which ensures
 - (d) protection of honey and pollen; (e) exclusion of the very short-lipped (allotropous) insects, but not too great specialisation for a very narrow circle of visitors; (f) prevention of self- and chance of cross-fertilisation till the last possible moment; (g) certainty of self-fertilisation if the cross fails;
- (3) the use of the calices of individual fls. for purposes of seed-distribution, and the very perfect character of the mechanism.

These considerations should be compared with the features of rival fams., e.g. Cruciferae, Gramineae, Rubiaceae, Leguminosae.

Economic uses. The C. furnish but few useful plants (other than border or greenhouse pl.). See *Lactuca*, *Cichorium*, *Cynara*, *Heli-anthus*, *Carthamus*, *Chrysanthemum*, *Tanacetum*, &c.

Classification and chief genera (after Hoffmann). The classification of the C. and the determination of their genera is a matter of no small difficulty; we shall give only the primary groupings and their chief genera. [There are several exceptions to the characters given below.]

[*Abbreviations*: cap. = capitulum; tub. = tubular; lig. = ligulate; homog. = fls. in head all similar as to sex; heterog. = fls. of different sex in one head, e.g. ray ♀ and disc ♂.]

A. *TUBULIFLORAE*. Fls. of disc not ligulate. No latex.

1. *Vernoniæe* (cap. homog.; fls. tub., never yellow; anthers arrow-shaped at base, pointed or rarely tailed, with filaments inserted high above the base; stigmas semi-cylindrical, long, pointed, hairy outside); stigmatic papillae all over inner surface: *Vernonia*, *Elephantopus*.
2. *Eupatoriæe* (cap. homog.; fls. tub., never pure yellow; anthers blunt at base, with filaments inserted at base; stigmas long, but blunt or flattened at tip, with very short hairs; stigmatic papillae in marginal rows): *Ageratum*, *Eupatorium*, *Mikania*, *Adenostemma*.
3. *Astereæe* (cap. heterog. or homog.; all or only central fls. tub.; anthers as in 2; stigmas flattened with marginal rows of papillae, and terminal hairy unreceptive portions): *Solidago*, *Bellis*, *Aster*, *Erigeron*, *Baccharis*, *Callistephus*, *Olearia*.
4. *Inuleæe* (as 4; corolla in tub. fls. with 4—5-toothed limb; anthers tailed at base; styles various): *Blumea*, *Filago*, *Antennaria*, *Gnaphalium*, *Helichrysum*, *Inula*.

5. *Heliantheae* (style with crown of long hairs above the division; anthers usu. rounded at base with basally inserted filaments; corolla of disc fls. actinom.; pappus not hairy; invol. bracts not membranous at margins; recept. with scaly br.): Espeletia, Silphium, Xanthium, Zinnia, Siegesbeckia, Helianthus, Dahlia, Bidens, Cosmos, Tithonia.
 6. *Helenieae* (as 5, but recept. without scaly br.): Helenium, Tagetes.
 7. *Anthemideae* (as 6, but invol. br. with membranous tip and edges; pappus 0 or abortive): Achillea, Anthemis, Chrysanthemum, Matricaria, Tanacetum, Artemisia.
 8. *Senecioneae* (as 5 and 6, but pappus hairy): Tussilago, Petasites, Senecio, Doronicum.
 9. *Calenduleae* (cap. with ♀ ray fls., and usu. ♂ disc fls., with undivided style; anthers pointed at base; recept. not scaly; no pappus): Calendula.
 10. *Arctotideae* (style, below or at point of division, thickened or with circle of hairs; cap. with lig. ray fls.; anthers acute at base or with longer or shorter point and with filaments inserted above the base): Arctotis.
 11. *Cynareae* (style as in 10; cap. homog. or with neuter, rarely ♀, not ligulate, ray fls.; anthers usu. tailed; recept. usu. bristly; Echinops, Carlina, Arctium, Carduus, Cnicus, Cynara, Centaurea, Carthamus, Saussurea.
 12. *Mutisieae* (cap. homog. or heterog.; ray fls. when present usu. 2-lipped; disc fls. actinom. with deeply-divided limb, or 2-lipped): Barnadesia, Mutisia, Stiffelia, Gerbera.
- B. *LIGULIFLORAE*. All fls. ligulate. Latex.
13. *Cichorieae*: Cichorium, Rhagadiolus, Picris, Crepis, Hieracium, Leontodon, Taraxacum, Lactuca, Tragopogon, Scorzonera, Sonchus.

Compound (1.), where the stalk bears several leaflets; (head), *Angianthus*, *Echinops*; (fr.), aggregate, *Anona*, *Ranunculus*, *Rubus*.

Compressed, flattened.

Componeura Warb. (*Myristica* p.p.). Myrist. 6 trop. Am.

Conamomum Ridl. Zingiberaceae (I). 2 Malay Penins.

Conandrium Mez. Myrsinaceae (II). 3 Malaya.

Conandron Sieb. et Zucc. Gesneraceae (I). 1 Japan.

Conanthera Ruiz et Pav. Amaryllidaceae (III). 5 Chili.

Conanthus S. Wats. Hydrophyllaceae. 1 W. U.S. (incl. Nama 20).

Conceptacle, reproductive cavity.

Conceveiba Aubl. Euphorbiaceae (A. II. 2). 6 trop. S. Am.

Conchium Sm. = *Hakea* Schrad. (Proteac.).

Conchopetalum Radlk. Sapindaceae (II). 1 Madagascar.

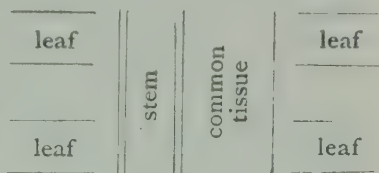
Conchophyllum Bl. (*Dischidia* B.H.). Asclep. (II. 3). 5 Malaya.

Concinnus (Lat.), neat.

Concolor (Lat.), of uniform colour.

Concrescence, union of originally distinct organs by growth of the tissue beneath them. Organs in the earliest stages of development are usu.

separate, and most often remain so, but frequently there is a subsequent growth of tissue under them, carrying them out upon a basal portion which most often (*e.g.* in sympet. fls.) has a similar structure to the organs themselves, so that they look as if joined together by their bases. The diagram shows this process on the right, but not on the left. It is common in fls., less so in other organs. It is not necessary for the concrescent organs to be similar; *e.g.* sta. are often united to pets., l. to stems (*cf.* Solanaceae, &c.). The phenomenon goes under many names—adnation, connation, adhesion, cohesion, &c.



Concrete, growing together.

Condalia Cav. Rhamnaceae. 12 warm Am.

Condaminea DC. Rubiaceae (I. 1). 3 Andes.

Condiments, or spices, veg. products used rather for the flavour than the food value, *e.g.* alexanders, almond, allspice, angelica, anise, asafoetida, balm, basil, camphor, caper, caraway, cardamoms, cassia, cayenne, celery, chillies, cicely, cinnamon, chives, cloves, coriander, cress, cucumber, cummin, curry-leaf, dill, fennel, fenugreek, garlic, ginger, horse-radish, Indian cress, Japan pepper, leek, lemon, lettuce, mace, marjoram, mint, mustard, myrrh, nutmeg, onion, parsley, pennyroyal, pepper, peppermint, pimento, rhubarb, rosemary, sage, samphire, savory, shallot, star-anise, tansy, thyme, turmeric, vanilla, watercress, &c.

Conduplicate (l.), folded lengthwise; (embryo), *Cruciferae*.

Condylocarpus Desf. Apocynaceae (I. 3). 10 trop. S. Am.

Cone, infl. of *Coniferae*, *Cycadaceae*, *Lycopodium*, &c.; -fl. (Am.), *Rudbeckia*.

Confertus (Lat.), crowded.

Confluent, blending.

Congdonia Muell.-Arg. Rubiaceae (II. 5). 1 Rio de Janeiro.

Congea Roxb. Verbenaceae (6). 5 Burma, Malaya. Cult. orn.

Congenital, grown to.

Congo pea, *Cajanus indicus* Spreng.

Congou, *Thea*.

Coniferae. The most important class of Gymnosperms, and like the others better represented in former ages than now. They form 2 fams. with 41 gen. and 380 sp. Like their past history, their present geographical distr. is of interest. Most are erect evergr. trees, and grow in dense forests, forming char. features of the veg. in many regions (esp. temp. and subtrop. and mountains). Beginning in the north we find *Juniperus nana* beyond the limit of trees. This limit is largely marked by the C. and the birch. Within it, in the N. temp. zone, are broad areas covered with C. (*Larix*, *Abies*, *Pinus*, &c.). Going S., their importance decreases, and at about 40° N. they become practically confined to the mountains. Here we find in Japan and China a region of development char. by *Cephalotaxus*, *Pseudolarix*, *Cryptomeria*, *Cunninghamia*, *Sciadopitys*, *Chamaecyparis*, *Keteleeria*, *Glyptostrobus*, *Taiwania*, &c.,

mostly endemic gen. In Pacific N. Am. is another region, with *Pseudotsuga Douglasii*, *Sequoia*, *Taxodium*, *Chamaecyparis*, *Lawsoniana*, *Thuja gigantea*, and *Libocedrus decurrens*, together with endemic *Abies*, *Tsuga*, *Pinus*, &c. The Himal. forms another great centre, with many peculiar sp., e.g. *Cedrus Deodara*, *Pinus excelsa*, and others, *Picea* sp., *Tsuga* sp., &c. The C. of the * are separated from those of the * by a broad band of trop. forests, &c., partially broken by groups of C. on the Mts. of the Indomal. region and Am. In Austr. we find *Araucaria*, *Agathis*, *Podocarpus*, *Callitris*, *Microcachrys*, *Athrotaxis*, *Actinostrobus*, &c. In Tasm., N.Z. and Chili appear *Phyllocladus*, *Fitzroya*, &c. S. Am. has *Araucaria* sp., *Podocarpus* sp., and others. Few gen. and no sp. of C. appear in both N. and S. hemispheres; each sp. is limited to a well-defined area.

Trees or shrubs, usu. monopodial, often of considerable or even (*Sequoia*) gigantic size. Typically, as may be seen in a fir or larch plantation, a certain amount of growth is made each year and a number of branches are also formed much at the same level, so that in trees of moderate size the number of 'whorls' of branches is an index of the age. Later on the lower branches usu. die off and the branching near the apex becomes less reg. The main stem is radially symmetrical, but the branches, which often grow almost horiz., have a tendency to dorsiventrality, expressed in a two-ranked arrangement of the l., twisting of the l. on their stalks, and so on. Many C. show a difference in their shoots; some (*long shoots*, or *shoots of unlimited growth*) grow continuously onwards, except for the interruption in winter; others (*short shoots*, *shoots of limited growth*, or *spurs*) grow only to a definite size, usu. very small, and bear a few l. Intermediate conditions occur in *Larix*, *Cedrus*, *Taxodium*, &c. When both kinds occur the foliage l. are often borne on the short shoots only (see *Pinus* &c. for details). The green l. are usu. entire and are either needle-like, flat and linear, or closely appressed scales (*Cupressus*, &c.). Mention may be made of the curious 'double-needles' of *Sciadopitys* and the flat green short shoots of *Phyllocladus* (*q.v.*).

Anatomically, the C. resemble Dicots. in all important points. A very general feature (exc. *Taxus*) is the presence of resin passages in all parts of the pl. The l. exhibit a somewhat peculiar internal structure, suited to xero. pl., under which class most C. come, living in cold soil, as most do, and often with evergr. l.

In the fl. we are met with great difficulties. There are two theories about its morphology, those of Eichler (*Blüthendiag.* or *Nat. Pfl.*) and of Celakovsky (see Warming's *System. Bot.* or *Bot. Jahresh.* 1890, p. 324, also Noll in *Bot. Centr.* 60, p. 131). We cannot discuss these (see Worsdell, in *Ann. of Bot.* 14, 1900, p. 39), but shall merely state both. As the order is usu. classified according to the Eichlerian view, we have adopted this in the classification and the details of the gen.

The fls. of C. appear as a rule in the form of *cones*, and are always unisex., mon- or dioecious. They are never term. on the main stem as in Cycads, but are usu. borne lat. near to its apex. Sometimes (as in *Pinus* ♂) the cones are massed together in spikes or heads.

Both theories agree about the ♂ fl., which is usu. a cone or catkin of sta. on a central axis. The sta. may be flat, but is commonly ± peltate, and bears a number of pollen-sacs (not > 9 as a rule) on its lower surface (see *Pinus*, *Taxus*, &c.). In the ♀, the cone (to avoid for the present the word flower) consists typically of an axis bearing leaf-like organs. The most familiar case is *Pinus* (*q.v.*), where each l. borne on the axis is a small scale, bearing on its upper surface a very large scale (these latter show on the outside of the cone) on the upper side of which, again, are the two ovules. We may diagrammatically represent it thus, using 'cover-scale' to express the lower, 'ovuliferous scale' (*epimatium*) the upper, of the two scales. In *Cryptomeria*, &c. we find a large scale borne directly on the axis, with a little flap on its upper side near the outer end, and the ovules at the base. The flap is, by both theorists, supposed to represent the ovuliferous scale, and so we have what is illustrated by the second diagram. Then in *Cupresseae*, &c. we find only one scale, and here the two theorists differ. In the other fam., *Taxaceae*, still further difficulties meet us. In *Microcachrys* the ovule is borne upon a l. of the cone, but in *Phyllocladus* it is axillary and in *Taxus* term. (see these gen.). In most C. there is only one integument, but in *Taxaceae* a second commonly appears, forming an aril, ± fleshy, round the seed as it ripens.

cover-scale
—
ovules
ovulif. scale
cover-scale
—
ovules

by the second

ovulif. sc. }
cover-scale }
—
ovules
ovulif. sc. }
cover-scale }
—
ovules

Now as to the explanation of the facts. Eichler regards the whole cone as one ♀ fl. with a number of cpls. (the 'cover-scales'). The cpl. may bear the ovule directly, as in the latter cases above mentioned, or may develope upon its upper surface a placenta (ovulif. scale) which bears the ovules. *Cryptomeria* thus represents a stage in this evolution, and the whole may be compared with the division of a l. into a sterile and fertile part, as in *Ophioglossum*. The rival theory of Celakovsky regards each ovule or pair of ovules with its appurtenances as a ♀ fl. (one cpl. to each ovule or pair) so that the cone is a spike of fls. A series may be thus drawn: *Podocarpus* (one cpl., one ovule with two integuments, the whole in the axil of a cover-scale, which is therefore to be regarded as a *bract*), *Taxus* (fl. reduced to ovule, aril=outer integument); then in the *Pinaceae* we have spikes of fls. (cones), the cover-scale being the bract, the ovuliferous scale the combined outer integuments of the ovules of two cpls. (or three, the keel on the middle of the scale in *Pinus*, &c. repres. the third): a fusion of the bract with the fl. in its axil is supposed to have gone on, and we get next the *Cryptomeria* type, and finally that of *Cupresseae*.

Ovules orthotr., exc. *Podocarpus*. For development of the ovule, fert., &c., see text-books. The cone often becomes hard and woody as the seeds ripen; in other cases it becomes fleshy. The seeds contain an embryo with 2—15 cotyledons, and rich endosp.

Natural History. The C. are entirely wind-fert.; the pollen is light and powdery, sometimes provided with air-bladders (*e.g.* *Pinus*),

and is produced in enormous quantities. About the time it is shed the scales of the ♀ cones open to receive it and the grains adhere to the sticky fluid at the apex of the ovule. Fert. often does not take place for a long time afterwards (see *Pinus*).

The seeds in many genera with woody cones (e.g. *Pinus*) are winged for wind-carriage; in other genera they are animal-distributed, e.g. *Juniperus* (cone fleshy), *Taxus* (fleshy aril), &c.

Further details of morphology, life history, &c. under *Gymnospermae*, *Pinus* and other gen. See also *Retinospora* for the peculiar case of pl. retaining the 'seedling' form throughout life.

Economically the C. are most important, furnishing the greater proportion of our timber, as well as resins, tars, turpentine, &c. See gen., esp. *Abies*, *Pinus*, *Larix*, *Tsuga*, *Libocedrus*, *Juniperus*, *Taxus*, &c.

Classification and Key to Genera (after Eichler and Engler):

Fam. I. TAXACEAE. Mostly dioecious; cone-formation imperfect; cpls. usu. few or even 1 terminal, with 1—2 ov. each; seeds projecting beyond cpls., or even naked, with fleshy aril or drupaceous testa; chiefly *.

A. Anther with 2 pollen-sacs; cpls. 1—∞, with 1 ov., often very small; ovuliferous scale in all but *Pherosphaera*, often united to integument.

I. PODOCARPOIDEAE.

a. Ovuliferous scale 0; ov. at base of cpl., erect; l. scaly.

1. *Pherosphaereae*.

1. *Pherosphaera*.

b. Ovuliferous scale present; l. usu. linear.

2. *Podocarpeae*.

a. Ov. scale and integument separate.

I. Cpls. many; ov. scale membranous, little enlarged.

1. Cpls. whorled, thick, obtuse; seeds free; l. scaly.

2. *Microcachrys*.

2. Cpls. spiral, imbr.; seeds in groove at base, small; fr. cpls. united; l. linear.

3. *Saxegothaea*.

II. Cpls. 1—few; ov. scale developed; young ov. ± pend., ultimately mostly upright, rarely stationary, enclosed in ov. scale.

4. *Dacrydium*.

β. Ov. scale completely curved into itself, united with integument of pend. ov., falling with seed; cpls. usu. small, much shorter than ov.

5. *Podocarpus*.

B. Anther with 2 loc.; cpls. with 1 ov.; seeds surrounded by cupule; twigs phylloclades with tooth-like l.-rudiments.

II. PHYLLOCLADOIDEAE.

Only genus

6. *Phyllocladus*.

C. Anther with 3—8 loc.; cpls. with 2 ov., or fl. reduced to 1 ov. term. on axis covered with scale l.; ov. scale 0; seeds with cupule, exc. in 7.

III. TAXOIDEAE.

a. ♀ fl. of several decussate cpls.; cpl. with 2 ov.

1. *Cephalotaxeae*.

7. *Cephalotaxus*.

b. ♀ fl. reduced to 1 ov. term. on axis covered with scale 1.

2. *Taxaceae*.

a. ♀ fl. in pairs in axil of l., each with 4 decussate scales; anther 4-loc. 8. *Torreya*.

β. ♀ fl. usu. single, only one of pair developed, the common axis with scale 1.; anther 6—8-loc.

9. *Taxus*.

Younger ♀ fl. unknown; position doubtful, ? *Podocarpoideae*; sta. 2-loc.; ♀ fl. term. or 2—3 at tip of twig; cpls. 1—2.

10. *Acropyle*.

Fam. 2. *PINACEAE*. Mostly monoecious; cones perfect; seeds concealed between scales; testa woody or leathery; no aril.

A. L. spirally arranged; sta. with several long pollen-sacs; cpls. simple, with 1 reversed ov. in centre.

I. *Araucarieae*.

Seeds free from cpl.

11. *Agathis*.

„ united to cpl.

12. *Araucaria*.

B. L. spirally arranged; cover and ov. scales, the latter usu. large, with 2 ov.

II. *Abietae*.

a. Long shoots only present.

a. Needles 4-angled; cone pend.; scales persistent.

13. *Picea*.

β. Needles flat.

I. L. with 1 central resin canal; cone pend.; scales persistent.

14. *Tsuga*.

II. L. with 2 lat. resin canals; cone pend. or erect; sta. fl. sol. or umbellate.

15. *Pseudotsuga*.

III. Cone upright with persistent scales.

16. *Keteleeria*.

IV. Cone upright with deciduous scales.

17. *Abies*.

b. Long and short shoots both present.

a. Long shoots with scale 1. only; the green (needle) 1. on the short shoots.

18. *Pinus*.

β. Needle 1. on both shoots.

I. Needles evergr.; fr. 2—3 yrs. in ripening.

19. *Cedrus*.

II. Deciduous; fr. 1 yr. in ripening.

Cone scales persistent. 20. *Larix*.

Cone scales deciduous. 21. *Pseudolarix*.

C. L. spirally arranged; scales rudimentary or weakly developed into cover and ov. scales; ovules 2—8, axillary and erect, or reversed on edges of cpls.

III. *Taxodiaceae*.

a. Long shoots with scale 1.; short shoots = double needles.

22. *Sciadopitys*.

b. Long shoots only.

a. Seed reversed.

I. Cpl. minute. China, Cochinchina.

Ovules 3.

23. *Cunninghamia*.

Ovules 2.

24. *Taiwania*.

- II. Cpl. with ridge-like inner scale. Tasmania, Austr. 25. *Athrotaxis*.
 - III. Cpl. shield-shaped, no distinct ov. scale. N. Am. 26. *Sequoia*.
 - β. Seed erect.
 - I. Cpl. with toothed scale. 27. *Cryptomeria*.
 - II. Cpl. shield-shaped, no distinct scale.
 - Cone scales persistent. N. Am. 28. *Taxodium*.
 - Cone scales deciduous. China. 29. *Glyptostrobus*.
 - D. L. opp. or whorled, rarely alt., often heterophyllous; ovule erect. IV. *Cupresseae*.
 - a. Cone woody when ripe; cpls. valvate.
 - I. *Actinostrobinæ*.
 - α. Branchlets compressed; cones sol., axis not produced beyond scales; scales 4; N. Afr. 30. *Tetraclinis*.
 - β. Branchlets angular; cones paniculate, axis produced beyond scales.
 - Scales 6 unequal; Austr. 31. *Callitris*.
 - „ 8 equal; Austr. 32. *Actinostrobus*.
 - „ 4 equal; trop. and S. Afr. 33. *Widdringtonia*.
 - γ. Branchlets flattened or angular; dioecious; ♂ cones sol. term.; axis produced; sharp point on back of each scale near top; Chili, Tasm. 34. *Fitzroya*.
 - b. Cone woody when ripe, cpls. imbr.; whorls of all fl. 2-merous. 2. *Thujopsidinae*.
 - α. Cpl. with 4—5 seeds. 35. *Thujopsis*.
 - β. Cpl. with 2 (1—3) seeds.
 - Cpls. 4, upper pair fertile. 36. *Libocedrus*.
 - Cpls. 6—8, both upper pairs fertile.
 - 37. *Thuja*.
 - 38. *Fokienia*.
 - c. Cone woody when ripe; cpl. peltate; whorls of all fls. 2-merous. 3. *Cupressinae*.
 - α. Cpls. strongly woody when ripe. 39. *Cupressus*.
 - β. Cpls. slightly woody when ripe; twig system flat in one plane. 40. *Chamaecyparis*.
 - d. Cone, berry or drupe-like when ripe. 4. *Juniperinae*.
 - Only genus. 41. *Juniperus*.
- Conimitella** Rydberg (*Heuchera* p.p.). Saxifr. (1). 1 W. U.S.
- Coniogeton** Blume = *Buchanania* Roxb. (*Anacard.*).
- Coniogramme** Fée. Polypodiaceae. 3 warm |*.
- Conioselinum** Fisch. (*Ligusticum* L. p.p. *BH.*). Umbelliferae (III. 6). 7 N. palaeotemp.
- Conium** L. Umbelliferae (III. 4). 2 N. temp., S. Afr. *C. maculatum* L. (hemlock, very poisonous) Brit.

Conjugate, coupled.

Connaraceae (EP., BH.). Dicots. (Archich. Rosales, EP., BH.). 16 gen., 160 sp., trop.; closely allied to Leguminosae, chiefly distinguished by the absence of stips. and the (usual) presence of > 2 free cpls. Mostly twining shrubs with alt. exstip. l. and panicles of reg. fls. K 5 or (5), imbr. or valvate; C 5; A 10 or 5 sometimes joined below; $\underline{G}$ 5 or 1 or 4, each with 2 erect orthotr. ov. Fr. usu. one follicle with one seed, album. or not, arillate. *Chief genera*: Connarus, Rourea, Cnestis.

Connaropsis Planch. Oxalidaceae. 5 Malay Arch.

Connarus L. Connaraceae. 70 trop. Am., Afr., As.

Connate (l.), concrescent, *Lonicera*.

Connective, the prolongation of the filament into the anther; elongated in *Begonia*.

Connellia N.E. Br. Bromeliaceae (2). 2 Guiana.

Connivent, converging.

Conobea Aubl. Scrophulariaceae (II. 6). 7 Am.

Conocarpus L. Combretaceae. 2 trop. Am., Afr.

Conocephalus Blume. Moraceae (III). 15 Indomal. The l. of *C. suaveolens* Blume possess water-secreting glands.

Conoclinium DC. = *Eupatorium* Tourn. p.p. (Compos.).

Conomitra Fenzl (*Glossonema* BH.). Asclep. (II. 1). 1 Kordofan.

Conomorpha A. DC. Myrsinaceae (II). 40 trop. Am., W. I.

Conophallus Schott = *Amorphophallus* Blume p.p. (Arac.).

Conopharyngia G. Don (*Tabernaemontana* L. p.p.; *Plumeria* Tourn. p.p. BH.). Apocynaceae (I. 3). 25 trop. and S.E. Afr.

Conopholis Wallr. Orobanchaceae. 1 Carolina to Mex.

Conophora DC. Nieuwland (*Cacolia* p.p.). Comp. (8). 8 N. Am.

Conopodium Koch. Umbelliferae (III. 5). 20 Eur., As., N. Afr. *C. denudatum* Koch (*Bunium flexuosum* With.) in Brit. (earth nut). The tuberous roots are ed. when roasted.

Conospermum Sm. Proteaceae (I). 35 Austr.

Conostegia D. Don. Melastomaceae (I). 15 trop. Am.

Conostephium Benth. Epacridaceae (3). 5 W. Austr.

Conostylis R. Br. Amaryllid. (III). (Haemodor., BH.) 35 W. Austr.

Conothamnus Lindl. Myrtaceae (II. 1). 3 W. Austr.

Conradia Mart. = *Pentarhaphia* Lindl. (BH.) = *Gesneria* L. p.p.

Conradina A. Gray. Labiatae (VI). 1 Florida.

Conringia Heist. ex L. Cruciferae (4). 6 E. Medit.

Constantia Rodrig. (*Sophronitis* p.p.). Orchid. (II. 6). 1 Braz.

Consuegria Mutis. Inc. sed. Nomen.

Contabescent (anther), shrivelling.

Contarinia Vand. Verbenaceae (?). 1 Brazil.

Contortae (Engler), the 5th order of Sympetalae.

Contorted (aestivation), cf. Aestivation.

Contortoduplicate, twisted and folded.

Contrayerva (W. I.), *Aristolochia*.

Conuleum A. Rich. Monimiaceae. 1 Guiana.

Convallaria L. Liliaceae (VII). 1 N. temp. (incl. Brit.), *C. majalis* L., lily of the valley, in woods. The stock develops a few scales and

two green l. annually. The fls. are homogamous and fert. themselves in absence of insects. Cult. orn. fl.

Convallariaceae (Warming) = Liliaceae (§ VI—XI).

Convolute (aestivation), *cf.* Aestivation.

Convolvulaceae (*EP.*, *BH.* incl. *Nolanaceae*). Dicot. (Sympet. Tubiflorae; Polemoniales *BH.*). 40 gen., 1000 sp., trop. and temp., many annual herbs, others shrubs or (rarely) trees; several thorny xero. many climbing herbs or lianes, and one (*Cuscuta*) a climbing parasite. Some have tuberous roots (*e.g.* *Ipomoea Batatas*), other rhiz. or tuberous stems; latex often present. L. alt., usu. petiolate, rarely with stips. Accessory buds often found in the leaf-axils. Infl. dich. with tendency to cincinnus or bostryx; br. and bracteoles present.

Fl. ♂, reg., hypog., usu. 5-merous. K usu. polysepalous, imbr., the odd sep. post.; C sympet., of various shapes, usu. induplicate-valvate, sometimes conv.; A 5, alt. with pets., epipet., on base of C, with usu. intr. anthers; G on a honey-secreting disc, (2), rarely (3—5), with axile plac.; ov. 2 in each loc. (rarely 4), erect, anatr. or semi-anatr., the micropyle facing outwards and downwards; one integument. Berry, nut or caps.; endosp.

Fls. usu. large, brightly coloured. Extra-floral nectaries in many on the petiole. Few of economic value exc. for handsome fls. (see *Ipomoea*).

The C. are closely related to Solanaceae, Boraginaceae and other Tubiflorae. See *Nat. Pfl.* and esp. note by Engler at p. 1 of art. C [BH. chars. incl. l. sometimes paired in infl.; G (2—5), or 5, divided by irreg. longitudinal constrictions; fr. of nutlets.]

Classification and chief genera:

I. **CONVOLVULOIDEAE** (independent green pl.): *Dichondra*, *Evolvulus*, *Porana*, *Ipomoea*, *Convolvulus*, *Argyreia*.

II. **CUSCUTOIDEAE** (leafless parasites); embryo without cotyledons): *Cuscuta* (only-genus).

Convolvulus (Tourn.) L. Convolvulaceae (I). 180 chiefly temp. *C. arvensis* L. Brit. (bindweed) has sweetly scented fls. which are much more often visited by insects than the large but scentless fls. of *Calystegia sepium*. Smaller fls. with short sta. appear on some stocks; these appear to be due to the action of a fungus (*cf.* *Lychnis* and see *Beih. z. Bot. Centr.*, 1893, p. 447). The root produces adv. stem buds, by which veg. repr. takes place. From incisions made in the rhiz. of *C. scammonia* L. a resinous juice flows, used as a purgative (scammony). Some yield rosewood oil. Cult. orn. fl.

Convolvulus, *Calystegia*, *Convolvulus*.

Conyza L. Compositae (3). 60 temp. and subtrop.

Conzattia Rose. Leguminosae (II. 7). 1 Mexico.

Cooba (Austr.), *Acacia salicina* Lindl.

Cookia Sonner. = *Clausena* Burm. f. (Rutac.).

Coondl, *Carapa*.

Cooperia Herb. Amaryllid. (I). 2 Mex., Texas (evening star).

Copaiba Adans. = *Copaifera* L. (Legum.).

Copaifera L. Leguminosae (II. 2). 25 trop. Am., Afr. Several

- S. Am. sp. yield the resin Balsam of Copaiba, and resins (copals) are also obtained from the Afr. sp. Timber good (purpleheart).
- Copaiva tree** (W.I.), *Copaifera*.
- Copal**, a hard resin, *Agathis*, *Copaifera*, *Hymenaea*, *Trachylobium*; **Manila**, **Kauri**-, *Agathis*.
- Copernicia** Mart. Palmae (I. 2). 10 trop. Am., W.I. *C. cerifera* Mart. (wax- or Carna-uba-palm, Brazil) has its l. coated with wax, removed by shaking; it is used in making gramophone records, candles, &c. The wood, l., &c., are also useful.
- Copianthus** Hill. Amarantaceae?. 1 Indomal.
- Copisma** E. Mey. = *Rhynchosia* Lour. p.p. (Legum.).
- Copper-beech**, *Fagus sylvatica* L. var.
- Copra**, dried endosp. of *Cocos nucifera* L.
- Coprosma** Forst. Rubiaceae (II. 7). 45 N.Z., Austr., Malaya, Chili. The stipules of some are glandular, and some have peculiar openings (? domatia) on the backs of the l.
- Copse**, coppice wood with occasional standard trees.
- Coptis** Salisb. Ranunculaceae (2). 10 N. temp. and arctic.
- Coptocheile** Hoffgg. Gesneriaceae (inc. sed.). 1 Brazil?
- Coptophyllum** Korth. Rubiaceae (I. 7). 1 Sumatra.
- Coptosapelta** Korth. Rubiaceae (I. 5). 4 Malaya.
- Coptosperma** Hook. f. (*Tarenna* p.p.). Rubiac. (I. 8). 1 trop. Afr.
- Coquilla**, **coquilho nut**, *Attalea funifera* Mart.
- Coquito palm**, *Jubaea spectabilis* H. B. et K.
- Coral-berry** (Am.), *Symphoricarpus*; **-creeper**, *Kennedya*; **-root**, *Corallorhiza*; **-tree**, *Erythrina*.
- Coralliokyphos** Fleischm. et Rech. Orchid. (II. 2). 1 Samoa.
- Corallobotrys** Hook. f. Ericaceae (III. 1). 1 Khasias.
- Coralllocarpus** Welw. ex Benth. et Hook. f. Cucurb. (2). 20 trop.
- Corallodiscus** Batalin. Gesneriaceae (I). 1 N. China.
- Corallonema** Schlechter. Asclepiad. (II. 1). 1 Bolivia.
- Corallorhiza** Hall. Orchidaceae (II. 4). 15 N. temp. *C. innata* R. Br. (coral-root) Brit. Saprophytes with much branched fleshy rhiz., no r., and scaly l. [Cf. *Epipogum*.]
- Corallospartium** Armstrong. Leguminosae (III. 6). 1 N.Z.
- Corbularia** Salisb. = *Narcissus* Tourn. p.p. (Amaryll.).
- Corchoropsis** Sieb. et Zucc. Tiliaceae. 2 Japan, China.
- Corchorus** (Tourn.) L. Tiliaceae. 40 trop. *C. capsularis* L. and *C. olitorius* L. (India, &c.) furnish the chief supply of the fibre jute or gunny; annuals about 10 feet high, little branched. The stems are cut and retted in water, and the fibre beaten out (cf. *Linum*).
- Cord-grass**, *Spartina*.
- Cordate**, heart-shaped.
- Cordeauxia** Hemsl. Leguminosae (II. 3). 1 trop. Afr.
- Cordia** L. Boragin. (I). 270 trop. Trees or shrubs; fr. ed.; that of *C. Myxa* L. (sebestens; Egypt to Austr.) formerly medic. Some have good timber, e.g. *C. Gerascanthus* L. (trop. Am., W.I., prince-wood), and *C. sebestana* L. (trop. Am., W.I., aloewood). [Mez in *Engl. Jahrb.* XII.]
- Cordiaceae** (Warming) = Boraginaceae (§ 1).
- Cordifolius** (Lat.), cordate-leaved.

- Cordobia** Niedenzu. Malpighiaceae. 1 S. Am.
- Cordyla** Lour. Leguminosae (II. 9). 1 trop. Afr. Pods ed.
- Cordylanthus** Nutt. (*Adenostegia* Benth.). Scroph. (III. 3). 12 N. Am.
- Cordyline** Royen ex Adans. Liliaceae (VI). 15 trop., warm temp. Decorative; habit of *Dracaena*. The l. of some sp. yield fibre.
- Cordylocarpus** Desf. (*Rapistrum* p.p. *BH.*). Crucif. (2). 1 N. Afr.
- Cordylogyne** E. Mey. Asclepiadaceae (II. 1). 1 S. Afr.
- Corema** D. Don. Empetraceae. 2 W. Eur., Atl. N. Am.
- Coreocarpus** Benth. (*Coreopsis* p.p. *EP.*). Comp. (5). 2 California.
- Coreopsis** L. Compositae (5). 80 Am., trop. Afr., Sandw. Is. Many cult. orn. fl.
- Corethroedendron** Fisch. et Basiner. Legum. (III. 7). 1 Soongaria.
- Corethrogynae** DC. Compositae (3). 4 Calif.
- Coriaceous**, leathery.
- Coriander**, *Coriandrum sativum* L.
- Coriandrum** (Tourn.) L. Umbelliferae (III. 3). 3 Medit. The fr. (coriander-seeds) of *C. sativum* L. are used in flavouring.
- Coriaria** Niss. ex L. The only genus of Coriariaceae. 10 Medit. to Japan, N.Z., Chili to Mexico, mostly shrubs with opp. or whorled l., sometimes becoming alt. at the ends of the shoots. The inconspic. protog. fls. are in racemose infls. K 5, C 5, A 5+5, G 5. The petals are keeled on the inner side, and after fert. grow fleshy and enclose the cpls. forming a pseudo-drupe. Ov. 1 in each loc., pend., anatr.; raphe dorsal. Endosp. thin. *C. myrtifolia* L. (W. Medit.) yields tan, others a black dye.
- Coriareae** (*BH.*) = Coriariaceae.
- Coriariaceae** (*EP.*, *BH.*). Dicots. (Archichl. Sapindales). Only genus *Coriaria* (*g.v.*). The only nearly related order is Empetraceae. Placed as anomalous order at end of Disciflorae *BH.*
- Coridothymus** Reichb. f. (*Thymus* p.p. *BH.*). Labi. (VI). 1 Medit.
- Corion** Mitch. = Spergularia J. et C. Presl (Caryoph.).
- Coriophyllus** Rydberg (*Cymopterus* p.p.). Umbel. (III. 6). 4 N. Am.
- Coris** Tourn. Primulaceae. 2 Medit. Fl. .f.
- Corispermum** B. Juss. ex L. Chenopodiaceae (A). 16 N. temp.
- Cork**, the substance of which the water-tight bark is composed; -oak, *Quercus suber* L.; -tree, Indian, *Millingtonia hortensis* L. f.; -wood, *Ochroma*, (Am.) *Leitneria*, (W.I.) *Anona palustris*.
- Corm**, the base of a stem swollen into a bulbous shape with reserves; *Colchicum* (and fig.), *Amorphophallus*, *Arisaema*, *Bowiea*, *Crocus*, *Cyclamen*, *Eranthis*, *Hablitzia*, *Testudinaria*.
- Cormonema** Reissek. Rhamnaceae. 4 trop. Am.
- Cormophyte**, a flowering plant or fern.
- Corn**, in Engl. wheat, in Am. maize; broom-, *Sorghum vulgare* Pers.; Chinese- (W.I.), *Setaria italica* Beauv.; -cockle, *Lychnis Githago* Scop.; -flower, *Centaurea Cyanus* L.; Guinea-, *Sorghum vulgare* Pers.; Indian-, *Zea Mays* L.; Kaffir-, *Sorghum vulgare* Pers.; -marigold, *Chrysanthemum segetum* L.; -salad, *Valerianella*.
- Corna** Nor. Inc. sed. Nomen.
- Cornaceae** (*EP.*, *BH.* incl. *Garryaceae*, *Nyssaceae*). Dicots. (Archichl.

Umbelliflorae; Umbellales *BH.*). 10 gen., 85 sp., N. and S. temp., and trop. Mts. Shrubs with opp. or rarely alt. leaves, usu. entire, exstip. Infl. dich., usu. condensed into corymbs or umbels, or even (Cornus) heads with invols. Fls. usu. ♂, reg., 4—5—∞-merous. K 4—5, C 4—5, A 4—5, $\overline{G}$ (2); epig. disc; simple style with lobed stigma; ovary 1—4-loc., with usu. 1 pend. ov. in each loc., the raphe dorsal. Fr. a berry or more often a drupe, with a 1—4-loc. stone or 2 separate stones. [*BH. chars.* include those of Garryaceae and Nysaceae, both rare.] *Chief genera*: Cornus, Aucuba, Griselinia.

Cornel, *Cornus sanguinea* L.

Cornelian cherry, *Cornus mas* L.

Cornella Rydberg (*Cornus* p.p.). Cornaceae. 3 N. temp. and arct.

Corniola Adans. = *Genista* L. (Legum.).

Cornish moneywort, *Sibthorpia europaea* L.

Corniveum Nieuwland (*Dicentra* p.p.). Papav. (III). 1 N.W. Am.

Cornucopiae L. Gramineae (8). 1 E. Medit., *C. cucullatum* L. Fls. in small heads; when the fr. is ripe these bend over and break off with a sharp point; they adhere to animals and are also said to burrow into the soil (*cf.* *Stipa*).

Cornuella Pierre. Sapotaceae (inc. sed.). 1 Venezuela.

Cornulaca Del. Chenopodiaceae (B). 5 Egypt to Afghanistan.

Cornus (Tourn.) L. Cornaceae. 48 N. temp.; 2 Brit., *C. sanguinea* L. (cornel or dogwood) and *C. suecica* L., the latter a dwarf perenn. herb (Highlands). Annual stems are given off from the creeping perenn. stems. Fls. in umbels with invols. of 4 large white br. *C. florida* L. (N. Am.) and others yield useful wood. *C. mas* (*mascula*) L. (Cornelian cherry, Eur., As. Minor) yields a fr. which makes good preserves. Its fls. appear in spring before the l.

Cornutia Plum. ex L. Verbenaceae (4). 8 trop. Am., W.I.

Corokia A. Cunn. Cornaceae. 3 N. Zealand.

Corolla, the inner, usu. coloured, envelope of l. of the fl.

Corolline, belonging to the corolla.

Coromandel wood, *Diospyros quaesita* Thw., &c.

Corona, *Amaryllidaceae*, *Asclepiadaceae*, *Napoleona*, *Passifloraceae*.

Coronanthera Vieill. Gesneriaceae (1). 10 New Caled.

Coronaria L. = *Lychnis* L. p.p. (Caryoph.).

Coronariseae (*BH.*). The 3rd series of Monocotyledons.

Coronilla Tourn. ex L. Leguminosae (III. 7). 20 Eur., Medit., W. As. The fl. resembles Lotus, but the honey is usu. secreted by the outer surface of the K, and insects poke between the claws of the petals. The buds are bent downwards, the open fls. project horiz., the ripening fr. down and the ripe fr. usu. up.

Coronopus Rupp. ex L. (*Senebiera* DC.). Cruciferae (2). 20 subtrop., Eur.

Coroya Pierre. Leguminosae (III. 8). 1 Cochinchina.

Corpse-plant (Am.), *Monotropa*.

Corpusculum, *Asclepiadaceae*.

Correa Andr. Rutac. (1). 5 temp. Austr. Cult. orn. shrubs (Australian fuchsia). Sympet.

Corrigiola L. Caryophyllaceae (I. 4). 12 Medit., Andes, S. Afr., Eur.

I Brit.

Corsia Becc. Burmanniaceae. I New Guinea.

Corsiaceae (Beccari), Burmanniaceae p.p.

Corsican pine, *Pinus Laricio* Poir.

Cortaderia Stapf. Gramineae (10). 10 S. Am. Pampas grass.

Cortesia Cav. Boraginaceae (II). 2 temp. S. Am.

Cortex, tissue between vascular bundles and epidermis.

Cortia DC. Umbelliferae (III. 5). 2 Himalaya.

Cortusa L. Primulaceae. I Mts. of Eur. and As. Cult. orn. fl.

Corunastylis Fitzgerald. Orchidaceae (II. 2). I Austr.

Coryanthes Hook. Orchidaceae (II. 13). 6 trop. S. Am., epiphytic. Fl. pend.; seps. bent back and fairly large, pets. small. Labellum complex, forming a bucket-like organ with dome above; the mouth faces upwards, and the edges are incurved; there is also an overflow pipe projecting towards the seps. and closely covered in by the bent end of the column, with the stigma and anther. From the base of the column project two horns which secrete a thin watery fluid that drips into the bucket, keeping it full to the level of the overflow pipe. The dome (above) is composed of succulent tissue attractive to bees; these fight for places on it to drill the tissue; every now and then one gets pushed off and falls into the bucket. It can neither fly nor climb out, and has to squeeze through the overflow pipe. In so doing it first passes the stigma, fertilising it if it bears any pollen, and then, passing the anther, is loaded with new pollinia. [Darwin's *Orchids*, p. 173, and *cf.* Stanhopea.]

Corybas Salisb. = *Coryanthes* R. Br. (Orchid.).

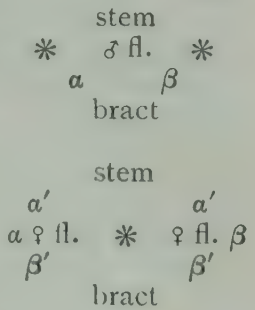
Corycium Swartz. Orchidaceae (II. 1). 10 S. Afr.

Corydalis Vent. Papaveraceae (III). 120 Medit., Eur., As. *C. claviculata* DC. Brit., a (leaf) tendril-climbing annual. Most are perennial herbs with underground tubers. In *C. cava* Schweigg. et Kort., and others, the main axis forms a tuber, which dies away below, each annual shoot arising from the axil of a scale-l. of older date. In *C. solida* Sw., and others, the tuber is a swollen root-structure belonging to the current annual shoot. Fls. transv. † (see fam. for diagram); twisting through 90° brings it vertical; only one petal is spurred and contains the honey secreted by a staminal outgrowth. Its mech. resembles that of Leguminosae. The inner pets., united at the tip, enclose stigma and anthers; the upper pet. covers the fl. Bees alighting push down the inner pet. and cause the essential organs to emerge. In some, *e.g.* *C. ochroleuca* Koch and *C. lutea* DC., the emergence is explosive (*cf.* Genista). The fls. of *C. cava* are self-sterile.

Corylopsis Sieb. et Zucc. Hamamelidaceae. 10 China, Japan. Fls. ♀, in spikes with coloured bracts at base.

Corylus (Tourn.) L. Betulaceae (I). 8 N. temp. *C. avellana* L., hazel-nut (Brit.). Shrubby (largely owing to extensive formation of suckers), with monoecious catkinate fls. (the ♀ catkin sessile and elliptical in outline, rather resembling a bud). Both are laid down in autumn; the ♂ catkins are visible all winter, but the ♀ are not obvious until the red stigmas come out early in the year. Anemoph.;

the fact of fig. before the appearance of the l. renders their chance of fert. greater. On the inner side of the br. in the ♂ catkin are found 2 scales and, adnate to these, 4—8 sta., each branched nearly to the base. Here only the central fl. of the possible 3 (*cf.* diagram of fam.) is present, with its bracteoles α , β . In the ♀ catkin, on the other hand, we have the two lat. and not the central fl. as shown in the second diagram (* = missing fl.). At the time of fert. the ovary is minute, but the long red stigmas are easily identified. After fert. the ovary (2-loc. at first) gives a one-seeded nut, enclosed in a cup of green leafy nature, really the combined bract and bracteoles α , α' , β' , very much developed.



The fl. is chalazogamic (*cf.* *Chalazogamiae*). The nuts of this and other sp. are valuable as dessert fr., &c. (hazel-nut, cob-nut, filbert), and have been cultivated from very early times (*cf.* Goeschke, *Die Haselnuss*, Berlin, 1887). Wood elastic, but cannot be obtained in large boards. Oil from the seeds.

Corymb, a raceme in which the stalks of the lat. fl. elongate to bring all to one level, *Cruciferae*, *Iberis*.

Corymbis Thou. Orchidaceae (II. 2). 12 trop.

Corymbium L. Compositae (I). 7 S. Afr.

Corymborchis Thou. (*Corymbis* B.H.). Orchid. (II. 4). 16 trop.

Corymbostachys Lindau. Acanthaceae (IV. B). 1 Madag.

Corynaea Hook. f. Balanophoraceae. 4 Andes.

Corynanthe Welw. Rubiaceae (I. 5). 5 trop. Afr.

Corynella DC. Leguminosae (III. 6). 3 W.I.

Corynephorus Beauv. (*Weingaertneria* Bernh.). Gramineae (9). 3 Eur.
C. (*W.* or *Aira*) *canescens* Beauv., Brit.

Corynephyllum Rose. Crassulaceae. 1 Mexico.

Corynitis Spreng. Leguminosae (III. 6). 2 Cuba.

Corynocarpaceae (E.P., *Anacardiaceae* p.p. B.H.). Dicots. (Archichl. Sapindales). Only genus *Corynocarpus*, *q.v.*

Corynocarpus Forst. Corynocarpaceae. 3 New Hebrides, New Caled., N. Zealand. Trees or shrubs with alt. leathery l. and panicles of ♂ fl. A in two whorls, inner sta. stds.; G (2), one fertile, with one pend. ov. Compressed drupe. No endosp.

Corynostylis Mart. (*Calypttrion* E.P.). Violaceae. 2 trop. S. Am.

Corynotheca F. Muell. Liliaceae (III). 3 trop. and W. Austr.

Corynula Hook. f. Rubiaceae (II. 7). 1 Colombia.

Corypha L. Palmae (I. 2). 6 Ceylon, Indomal. The gigantic infl. terminates the life of the tree. *C. umbraculifera* L. (talipot palm, Ceylon, S. Ind.) grows to a great size, up to 80 feet. The l. are used as umbrellas, and for thatching, also as writing material (a metal stylus being used).

Coryphantha Lem. = *Mamillaria* Haw. p.p. (Cact.).

Coryphium (Cl.), an alpine meadow formation.

Corysanthes R. Br. Orchidaceae (II. 2). 20 N.Z. to Malaya.

Corythea S. Wats. Euphorbiaceae (A. II. 7). 1 Mexico.

Corytholoma Decne. (*Gesneria* p.p.). Gesn. (II). 60 trop. Am.

- Coscinium** Colebr. Menispermaceae. 4 Indomal.
- Cosmanthus** Nolte = *Phacelia* Juss. p.p. (Hydrophyll.).
- Cosmea** Willd. = *Cosmos* Cav. (Compos.).
- Cosmelia** R. Br. Epacridaceae (2). 1 S.W. Austr.
- Cosmibuena** Ruiz et Pav. (1802). Rubiaceae (1. 5). 6 trop. Am. Good bud-protection by the stips. of the last-opened l.
- Cosmibuena** Ruiz et Pav. (1794) = *Hirtella* L. (Rosaceae).
- Cosmos** Cav. (*Cosmea* Willd.). Compos. (5). 20 Am., W.I. Orn. fl.
- Cosmostigma** Wight. Asclepiadaceae (11. 3). 1 Indomal.
- Cossinia** (*Cossignia*) Comm. ex Lam. Sapind. (11). 3 Masc., New Cal.
- Cossonia** Durieu (*Raffenaldia* BH.). Cruciferae (2). 3 N. Afr.
- Costaea** A. Rich. (*Purdica* BH.). Cyrillaceae. 3 Cuba, Colombia.
- Costate** (diminutive **costulate**), ribbed.
- Costera** J. J. Smith. Ericaceae (III. 1). 1 Borneo.
- Costularia** C. B. Clarke. Cyperaceae (11). 9 Masc., S. Afr.
- Costus** L. Zingiberaceae (11). 40 trop. Labellum very large, lat. stds. wanting, sepals and petals comparatively small. Projecting in the centre is the fertile petaloid sta. with anther on its ant. face; the style reaches just above this. The fl. mech. thus resembles *Iris*. Cult. orn. pl.
- Cota** J. Gay = *Anthemis* Mich. p.p. (Compos.).
- Cotinus** (Tourn.) L. (*Rhus* L. p.p. BH.). Anacard. (3). 2 N. temp.
- Cotoneaster** Rupp. Rosaceae (11). 30 N. temp. *C. vulgaris* Lindl. Brit. In the Alps visited solely by a wasp (*Polistes gallica*) whose nests are often attached to the rocks where the pl. grows. Fl. protog. with self-fert. in default of insects. Several cult. orn. shrubs.
- Cottea** Kunth. Gramineae (10). 1 trop. Am. to New Mexico.
- Cottendorffia** Schult. f. Bromeliaceae (2). 2 trop. S. Am.
- Cotton**, the fibre of *Gossypium*, and loosely, of other *Malvaceae* and *Bombacaceae*. The fibre most used, and extensively cult. in the U.S., India, Brazil, trop. Afr., Japan, W.I., &c. It is the fine silky fibre enveloping the seed, and in *G. barbadense* and others comes clean away, but in *G. herbaceum* and most spp. leaves a 'fuzz' adhering to the seed. There are many grades upon the market: the longest and finest 'staple' is that of Sea Island, *G. barbadense* L., and the next best Egyptian and some Brazilian and American. The bulk of the supply is American 'Upland,' and the poorest qualities come from India. For details see Watt, *Wild and Cult. Cotton Plants of the World*; Willis, *Agriculture in the Tropics*. -**grass**, *Eriophorum*; -**rose** (Am.), *Filago*; -**sedge**, *Eriophorum*; **silk**-, *Eriodendron*, *Chorisia*; -**thistle**, *Onopordon*; -**tree**, *Bombax*; -**weed**, *Diotis*; -**wood tree**, *Populus*.
- Cottonia** Wight. Orchidaceae (11. 20). 2 Ceylon to China.
- Cottony**, with soft long hairs.
- Cotula** (Tourn.) L. (incl. *Cenia* Juss. EP.). Compositae (7). 50 cosmop., esp. *. Cult. orn. fl.
- Cotylanthera** Blume. Gentianaceae (1). 3 E. Indomal., Mariannes.
- Cotyledon** Tourn. ex L. (incl. *Echeveria* DC.). Crassulaceae. 100 Afr., Eur., As., Mexico, S. Am. *C. Umbilicus* Linn. (penny-wort) Brit. Pets. united into a tube. L. succulent. Cult. orn. fl.
- Cotyledon**, a seed l.

- Cotylelobiopsis** Heim. Dipterocarpaceae. 1 Borneo.
Cotylelobium Pierre. Dipterocarpaceae. 5 Indomal.
Cotyloform, dish- or wheel-shaped.
Cotylodiscus Radlk. Sapindaceae (1). 1 Madagascar.
Cotylonychia Stapf. Sterculiaceae. 1 trop. Afr.
Coublandia Aubl. (*Muellera* L. f.). Legum. (III. 8). 3 trop. Am.
Couch grass, *Agropyron repens* Beauv.
Coudenbergia March (*Pentapanax* EP.). Araliac. (2). 1 Brazil.
Couepia Aubl. Rosaceae (VI). 45 S. Am.
Coula Baill. Olacaceae. 2 trop. Afr.
Coulterella Vaizey et Rose. Compositae (5). 1 Lower Calif.
Coulterophytum Robinson. Umbelliferae (III. 6). 5 Mex.
Couma Aubl. Apocynaceae (I. 1). 5 Brazil, Guiana.
Coumarin, *Anthoxanthum*.
Coumarouna Aubl. (*Dipteryx*, q.v.). Legum. (III. 8). 8 trop. Am.
Country almond (Ceylon), *Terminalia Catappa* L ; **-walnut**, *Aleurites triloba* Forst.
Coupoui Aubl. Rubiaceae (inc. sed.) (Apocyn. BH.). 1 Guiana.
Couralia Splitg. Bignoniaceae (2). 4 trop. S. Am.
Courantia Lemaire (*Cotyledon* Tourn.). Crassul. 1 Mexico.
Couratari Aubl. Lecythidaceae. 8 S. Am. The bark yields a soft fibre used for making clothing.
Courbonia Brongn. Capparidaceae (II). 5 trop. Afr.
Courimari Aubl. Inc. sed. 1 Guiana.
Couroupita Aubl. Lecythid. 9 trop. S. Am., W.I. The fls. of *C. guianensis* Aubl. are borne on the old stems and followed by large spherical woody caps. (whence the name cannon-ball tree). Good timber.
Coursetia DC. Leguminosae (III. 6). 15 Brazil to Calif.
Courtoisia Nees. Cyperaceae (1). 2 trop. As., Afr.
Cousinia Cass. Compositae (II). 240 E. Medit., W. As.
Coussapoa Aubl. Moraceae (III). 18 trop. S. Am.
Coussarea Aubl. Rubiaceae (II. 8). 45 Brazil, Venezuela.
Coutarea Aubl. Rubiaceae (I. 5). 6 trop. Am., W.I.
Couthovia A. Gray. Loganiaceae. 5 Polynesia, Malay Arch.
Coutcubea Aubl. Gentianaceae (1). 4 trop. S. Am., W.I.
Covellia Gasp. = *Ficus* Tourn. p.p. (Morac.).
Cover-scale, *Coniferae*.
Covilhamia Kunth. Sterculiaceae. 1 Borneo.
Covillea Vail. = *Larrea* Cav. (Zygophyll.).
Cow-bane, *Cicuta virosa* L.; **-berry**, *Vaccinium Vitis-Idaea* L.; **-itch**, *Mucuna pruriens* DC.; **-parsnip**, *Heracleum Sphondylium* L.; **-pea**, *Vigna sinensis* Endl.; **-tree**, *Brosimum*; **-wheat**, *Melampyrum*.
Cowage, *Mucuna pruriens* DC.
Cowania D. Don. Rosaceae (III. 2). 3 Mexico, S.W. U.S.
Cowiea Wernham. Rubiaceae (I. 8). 1 Borneo.
Cowrie pine, *Agathis australis* Steud.
Cowslip, *Primula veris* Lehm.
Coxella Cheesem. et Hemsl. Umbellif. (III. 5). 1 Chatham Is.
Crab grass (Am.), *Panicum*, *Eleusine*; **-s eyes**, *Abrus precatorius* L.; **-wood** (W.I.), *Carapa guianensis* Aubl.

- Crabbea** Harv. Acanthaceae (IV. A). 12 trop. and S. Afr.
Cracca Benth. ex Oerst. Leguminosae (III. 6). 6 trop. Am.; **do.** L.
 = *Tephrosia* Pers.; **do.** (Riv.) Medic. = *Vicia* Tourn. p.p.
Craibia Harms et Dunn. Leguminosae (III. 6). 15 trop. Afr.
Craibiodendron W. W. Smith. Ericaceae (II. 1). 1 Burma.
Crambe Tourn. ex L. Cruciferae (2). 20 Eur., Medit., As., Polynes.,
 Patagonia. *C. maritima* L. (sea-kale) on coast of Brit. has l. fleshy
 and waxy. The young l. blanched form a veg.
Cranberry, *Vaccinium Oxycoccus* L.
Crane's bill, *Geranium pratense* L., &c.
Cranichis Sw. Orchidaceae (II. 2). 25 trop. Am., W.I.
Craniolaria L. Martyniaceae. 3 S. Am.
Craniospermum Lehm. Boraginaceae (IV. 2). 3 temp. As.
Craniotome Reichb. Labiatae (VI). 1 Himalaya.
Cranocarpus Benth. Leguminosae (III. 7). 2 Brazil.
Crantzia Scop. (*Alloplectus* Mart. *EP.*). Gesneriaceae (I). 35 trop.
 Am.; **do.** Nutt. Umbelliferae (III. 5). 1 Am., Austr., N.Z.; **do.**
 Pohl. Inc. sed. Nomen.
Craspedia Forst. f. Compositae (4). 4 temp. Aust., N.Z.
Craspedodictyum Copeland (*Gymnogramme* p.p.). Polypodiaceae.
 2 Malay Arch., Polynesia.
Craspedorachis Benth. Gramineae (II). 2 trop. Afr.
Craspidospermum Boj. ex DC. Apocynaceae (I. 1). 1 Madag.
Crassocephalum Moench. (*Gynura EP.*). Comp. (8). 20 warm Afr.,
 As.
Crassula Dill. ex L. (incl. *Dinacria* Harv., and *Tillaea* Michx. *EP.*).
 Crassulaceae. 150 S. Afr., a few Abyss. and Himal., chiefly succu-
 lent-l. xero. In *C. lycopodioides* Lam. the l. are narrow and closely
 packed, giving to the pl. the habit of a Lycopodium. In *C. (Rochea)*
falcata Wendl. the connate decussate l. stand almost edgewise, and
 are very fleshy; some of the epidermal cells are swollen above the
 rest into large bladders which meet one another over the whole
 surface. At first living, when the l. is mature they are dead and
 full of air, their walls infiltrated with quantities of silica. A pro-
 tection against evap. is thus afforded. In *C. nemorosa* Endl. there is
 veg. repr. by the formation of young plants in the infl. in place of fls.
Crassulaceae (*EP.*, *BH.*). Dicotyledons (Archichl. Rosales *EP.*, *BH.*).
 15 gen., 450 sp. cosmop., chiefly S. Afr., a very natural group. Most
 are perenn. living in dry (esp. rocky) places and exhibit xero. chars.,
 fleshy l. and stem, often tufted growth, close packing of l., waxy
 surface, sunk stomata, &c. Veg. repr. frequent; usu. by rhiz. or
 offsets; some form bulbils, &c. (*e.g.* *Crassula*), others form adv.
 buds upon the l. (*e.g.* *Bryophyllum*). Fls. usu. in cymes (cincinni),
 ♂ or rarely unisex., actinom. with very reg. construction. Formula
 $K_n, C_n, A_{n+n}, \underline{G}_n$, where n represents any number from 3 to 30.
 K persistent; C sometimes (*e.g.* *Cotyledon*) gamopet.; A frequently
 obdipl. Insertion of parts usu. perig., but recept. not deeply hollowed.
 Cpls. frequently slightly united at the base; at the base of each
 commonly a honey-secreting scale; ov. usu. ∞ . Fr. usu. a group
 of follicles with very small seeds. Endosp. none or very little. Fls.
 mostly protandr. and chiefly visited by flies, &c., their honey being

easily obtainable. *Chief genera*: *Sedum*, *Sempervivum*, *Cotyledon*, *Bryophyllum*, *Crassula*.

Crassus (Lat.), thick.

Crataegus Tourn. ex L. (*Mespilus* EP. The boundaries of these two genera and of *Pyrus* are ill-defined.) Rosaceae (II). 100 N. temp. Some hundreds of spp. have in recent years been described from the U.S., but there is some possibility that they may arise through hybridisation (cf. *Journ. of Hered.*, June 1916). *C. Oxyacantha* L. (hawthorn or may) in Brit. The thorns are modified branches. Collateral buds appear in the axils. Fls. of class AB. The wood is a substitute for that of box in engraving, &c.

Crataemespilus × G. Camus. Hybrid, *Crataegus*—*Mespilus*. 1 Eur.

Crataeva L. Capparidaceae (II). 10 trop.

Crateranthus E. G. Baker. Lecythidaceae. 1 Nigeria.

Crateriform, cup-shaped.

Crateriphytum Scheff. ex Koord. Loganiaceae. 1 Moluccas.

Craterispermum Benth. Rubiaceae (II. 1). 10 trop. Afr., Seychelles.

Craterosiphon Engl. et Gilg. Thymelaeaceae. 2 Cameroons.

Craterostemma K. Schum. Asclepiadaceae (II. 3). 1 S.E. Afr.

Craterostigma Hochst. Scrophulariaceae (II. 6). 5 trop. and S. Afr.

Cratoxylon Blume. Guttiferae (II). 12 Indomal.

Cratylia Mart. Leguminosae (III. 10). 6 S. Am.

Cratystylis Sp. Moore (*Olearia* p.p. in part.). Comp. (3). 3 Austr.

Crawfurdia Wall. Gentianaceae (I). 10 warm As.

Creaghia Scortech. (*Mussaendopsis* EP.). Rubiac. (I. 5). 1 Malaya.

Creaghiella Stapf. Melastomaceae (I). 1 Borneo.

Creeper, **Canary**, *Tropaeolum peregrinum* L.; **trumpet-**, *Tecoma radicans* Juss.; **Virginian-**, *Parthenocissus*.

Creeping plant, one with stolons or runners, rooting at the nodes, *Agropyron*, *Agrostis*, *Ajuga*, *Fragaria*, *Ranunculus*, &c.

Cremanium D. Don = *Miconia* Ruiz et Pav. p.p. (Melast.).

Cremanthodium Benth. Compositae (8). 15 Himal., China.

Cremaspora Benth. Rubiaceae (II. 1). 6 trop. Afr., Madag.

Cremastra Lindl. Orchidaceae (II. 10). 2 Nepal, Japan.

Cremastus Miers (*Bignonia* BH.). Bignon. (I). 3 Brazil.

Cremnium (Cl.), a cliff formation.

Cremnophila Rose (*Sedum* p.p.). Crassulaceae. 1 Mex.

Cremocarp, a mericarp.

Cremocarpus Boiv. ex Baill. Rubiaceae (II. 7). 1 Comoros.

Cremolobus DC. Cruciferae (I). 10 Andes.

Crenamon Raf. Inc. sed. 1 N. Am.

Crenate (l.), teeth pointing forward, rounded; notches sharp.

Crenea Aubl. Lythraceae. 2 trop. Am.

Crenium (Cl.), a spring formation.

Creochiton Blume. Melastomaceae (I). 3 Java, Phil. Is.

Creosote plant, *Larrea mexicana* Moric.

Crape-flower, *Lagerstroemia*.

Crepidopsis Arv. Touv. Compositae (13). 1 Mex.

Crepidospermum Hook. f. Burseraceae. 2 Northern S. Am.

Crepinella Marshal. Araliaceae (I). 1 Brit. Guiana.

Crepis (Vaill.) L. (incl. *Barkhausia* Moench.). Compositae (13).

220 N. Hemisph., S. Afr., S. Am.; 6 in Brit. (hawk's beard). Like Hieracium.

Crescentia L. Bignon. (IV). 5 trop. Am. Fls. on old stems, succeeded by gourd-like berries; the epicarp is woody, and after removal of the pulp forms a calabash (*C. Cujete* L., calabash tree, most used).

Cress, *Lepidium sativum* L.; **American-**, *Barbarea praecox* R. Br.; **bitter-**, *Cardamine*; **Indian-**, *Tropaeolum*; **penny-**, *Thlaspi*; **rock-**, *Arabis*; **water-**, *Nasturtium officinale* R. Br.; **winter-**, *Barbarea*; **yellow-**, *Barbarea*, *Nasturtium*.

Cressa L. Convolvulaceae (I). 5 trop. and subtrop.

Crest, a ridge or outgrowth.

Cretaceous, chalky.

Cribriform, sieve-like.

Crinitus (Lat.), with soft hairs.

Crinodendron Molina (*Tricuspidaria* R. et P.). Elaeocarp. 2 Chili.

Crinum L. Amaryllidaceae (I). 70 trop. and subtrop., esp. on sea-coasts. Large bulbous pl. with showy fls. The seed of *C. asiaticum* L. (Goebel, *Pflanzenbiol. Schild.* I. p. 128) has a very thin corky covering and is suited to distr. by water and early germination. The ovule has no integuments, and the testa is replaced by a formation of cork at the outside of the endosp. Cult. orn. fl.

Crioceras Pierre (*Tabernaemontana* p.p.). Apocyn. (I. 3). 2 trop. Afr.

Crisp, **crispate**, **crisped**, curled.

Cristaria (Heist.) Cav. Malvaceae (2). 30 Chili, Peru.

Cristatella Nutt. Capparidaceae (v). 2 S.W. U.S.

Cristatus (Lat.), crested.

Crithmum L. Umbelliferae (III. 5). 1 *C. maritimum* L., the samphire, on rocky coasts, Medit., Eur. (incl. Brit.). It has much divided and very fleshy l. Used for making pickles.

Crocidium Hook. Compositae (8). 1 W. N. Am.

Crocion Nieuwland (*Viola* p.p.). Violaceae. 2 N. Am.

Crockeria Greene ex A. Gray. Compositae (6). 1 Calif.

Crocodiloides Adans. = *Berkheya* Ehrh. (Compos.).

Crocopsis Pax. Amaryllidaceae (I). 2 S. Am.

Crocasmia Planch. (*Tritonia* p.p. EP.). Iridaceae (III). 1, *C. aurea* Planch., trop. and S. Afr. Cult. orn. fl.

Crocus (Tourn.) L. Iridaceae (I). 60 Medit., Eur., 2 nat. in Brit. Below ground is a corm (*cf.* Colchicum), covered with a few scaly l., in whose axils may arise one or more buds, giving rise to new corms on the top of the old. The l. are dorsiv., and curiously grooved on the back. The fl. is often single and term.; in some sp. there is a small cyme. The fl. closes at night and in dull weather. The tube of the P is so long that the ovary remains below the soil and is protected from the weather (*cf.* Colchicum). The fl. is protandr. and visited by bees and Lepidoptera. Honey is secreted by the ovary, and the anthers face outwards so as to touch any insect alighting on the petals and seeking honey. The stigmas are branched. Birds often bite off the fls. in gardens (? for honey); they seem to prefer the yellow fls., leaving the blue and white alone.

The dried stigmas of *C. sativus* L. form saffron, once largely used as an orange yellow dye, but now chiefly employed in flavouring and

colouring dishes, liqueurs, &c. [See Kronfeld's *Geschichte des Safrans*, &c., Wien 1892, or *Beih. z. Bot. Centr.*, 1893, p. 71.]

Crocus, autumn; *Colchicum autumnale* L.

Crocyllis E. Mey. Rubiaceae (II. 7). 1 S. Afr.

Croftia King et Prain. Zingiberaceae (I). 1 India.

Croftia Small (*Schaueria* p.p.). Acanth. (IV. B). 1 N. Am.

Croixia Pierre. Sapotaceae (II). 1 Malaya.

Crookea Small (*Ascyrum* p.p.). Guttif. (II). 1 N. Am.

Croomia Torr. ex Torr. et A. Gray. Stemonaceae. 3 E. U.S., Japan.

Crosnes, *Stachys Sieboldi* Miq.

Crossandra Salisb. Acanthaceae (IV. B). 17 trop. As., Afr., Madag.

The seeds of many sp. are covered with scales which spread out and become sticky when wetted (*cf.* *Linum*). Cult. orn. fl.

Cross-fertilisation or **-pollination**, pollination from a distinct plant; *cf.* Floral mechanisms, Flower classes, &c.

Cross-wort, *Galium*.

Crossandrella C. B. Clarke. Acanthaceae (IV. B). 1 Uganda.

Crossonephelis Baill. Sapindaceae (I). 1 Nossi Bé.

Crossopetalum P. Br. = *Myginda* L. (Celastr.).

Crossopteryx Fenzl. Rubiaceae (I. 5). 2 trop. Afr.

Crossosoma Nutt. The only genus of Crossosomataceae. 3 S.W. U.S., Mex. Shrubs with small stiff l. and sol. fl. Like Rosaceae Spiraeoideae, but seeds kidney-shaped, with rich endosp. Aril. (Engler.)

Crossosomataceae (*EP.*; *Dilleniaceae* p.p. *BH.*). Dicot. (Archichl., Rosales). Only genus (*q.v.*) *Crossosoma*.

Crossostemma Planch. ex Benth. in Hook. Passifl. 1 W. trop. Afr.

Crossostephium Less. Compositae (7). 1 China, Phil. Is.

Crossostylis Forst. Rhizophoraceae. 6 Polynesia.

Crossotropis Stapf. Gramineae (II). 3 trop. Afr., Arabia.

Crotalaria Dill. ex L. Leguminosae (III. 3). 350 trop. and sub trop.

C. juncea L. (India, Austr.), an annual about 8 ft. high, is largely cult. for the fibre obtained from its stems by maceration in water (*cf.* *Linum*), known as Sunn-hemp, Bombay or Madras hemp, &c.

C. retusa L. (trop.) is also employed.

Croton L. Euphorbiaceae (A. II. 1). 600 trop. and sub trop. Fls. mon- or dioecious, little reduced from the type of the fam. *C. Tiglium* L. (trop. As.) is the source of croton oil (a powerful purgative drug, expressed from the seeds). *C. Cascarilla* Benn. and *C. Eluteria* Benn. (Bahamas) yield Cascarilla bark, used as a tonic (*cf.* *Cascarilla*). *C. lacciferus* L. (India, Ceylon) yields a lac, used in varnish-making, and several Brazilian spp. a dragon's blood resin.

Croton (of trop. gardens), *Codiaeum variegatum* Bl.

Croton-oil, *Croton Tiglium* L.

Crotonogyne Muell.-Arg. Euphorbiaceae (A. II. 2). 10 trop. Afr.

Crotonogynopsis Pax. Euphorbiaceae (A. II. 2). 1 trop. Afr.

Crotonopsis Michx. Euphorbiaceae (A. II. 1). 2 N. Am.

Crow-berry, *Empetrum nigrum* L.; **-foot**, *Ranunculus*; **-foot-grass**, *Dactyloctenium*.

Crowea Smith. Rutaceae (I). 4 Austr.

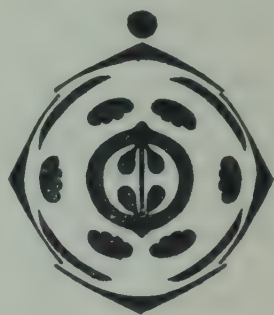
Crown-bark, *Cinchona*; **-heard** (Am.), *Verbesina*; **-Imperial**, *Fritillaria imperialis* L.; **-palm** (W.I.), *Maximiliana*.

Crucianella L. Rubiaceae (II. 11). 4 Eur., Medit. Cult. orn. fl.

Cruciate, cross-shaped.

Cruciferae (EP., BH.). Dicots. (Archichl. Rhoeadales; Parietales BH.). 220 gen., 1900 sp., cosmop., but chiefly N. temp. and esp. Medit.; a very natural fam., well marked off from others, though approaching Papaveraceae and Capparidaceae. Herbs, a few undershrubs; some ann., many perenn., forming each year a new shoot term. in the infl. L. usu. alt., exstip., with unicellular simple or branched hairs. For other peculiarities of veg. organs see gen., e.g. Brassica, Anastatica, Subularia, Vella, &c. Infl. usu. a raceme or corymb, and nearly always without bracts or bracteoles.

Fl. usu. ♀, reg., hypog., with typical formula $K\ 2+2, C\ 4, A\ 6, \underline{G}\ (2)$. The K has two whorls, the C only one, alt. with the K as a whole. The petals usu. spread out in the form of a cross and are often clawed; the sta. in two whorls, an outer of 2 short, an inner of 4 long, sta. (tetradynamous); anthers intr. The two cpls. are placed transv., and have parietal plac., but the ov. is 2-loc. on account of the presence of an antero-post. partition, the *replum* or so-called spurious septum, an outgrowth of the placentae. Stigmas 2, on short style, above the placentae (cf. Papaveraceae). Ovules anatropous.



Floral Diagram
(after Eichler).

The explanation of the morphology of this fl. has given rise to much dispute. It is usu. regarded as a typically 2-merous fl. (cf. Papaveraceae), and the 4 petals and 4 inner sta. are supposed to be due to branching. Others regard it as 4-merous (e.g. Klein in *Bot. Centr.* 58, p. 197). Full discussion in Eichler's *Blüthendiagr.* or in Asa Gray's *Struct. Bot.* p. 206.

On the bases of the sta. are the nectaries, the honey being secreted into the often gibbous bases of the inner sepals. The sepals often stand almost straight up, and the petals are then provided with claws and spread out horiz. beyond the sepals. The honey is thus concealed to some extent and protected from rain. The majority of the order exhibit this construction more or less, thus coming into the biological fl.-class AB. In many gen. the fls. are arranged in corymbs, thus getting the advantage of many fls. massed together on one level (cf. Umbelliferae and Compositae). Insects visiting the fls. touch the anthers with one side of their bodies and the stigma with the other, and may in this way effect cross-fert., as they go sometimes to one, sometimes to the other, side of the fl. Dichogamy is frequent, but not well marked, and in almost all self-fert. ultimately occurs. [Müller, *Fert. of Fls.*]

Fr. a caps. of pod-like form; if at least three times as long as broad it is called a *siliqua*, if shorter a *silicula*. It is divided into two by the replum and is usu. thin and membranous. The valves break away from below upwards, leaving the replum with the seeds pressed against it and adhering. The fr. may be flattened in two

ways, either $\parallel$ or $\perp$ the replum; this char. is of systematic importance. It may also be jointed between the seeds as in a lomentum (Leguminosae). Achene-like one-seeded fr. occur in a few gen. Others have subterranean fr. (Cardamine sp., &c.).

The chars. of the seed are also of great importance in classification. The seed is exalb.: the testa is often mucilaginous, swelling up when wetted (e.g. the familiar case of mustard seed). The ovules being campylotr., the embryo sacs, and embryos, are curved, usu. with the radicle in one half of the seed, the cots. in the other. The shape of the embryo and the position of the radicle with regard to the cots. are important. The chief cases are: (1) radicle *incumbent* (or embryo *notorhizal*), i.e. lying on the back of one cot., the cots. not being folded on themselves; this may be shown thus $\circ\parallel$, the $\circ$ repres. the radicle; (2) *accumbent* (or embryo *pleurorhizal*), $\circ=$, the radicle against the edges of the cots.; (3) *orthoplocous* (cots. *conduplicate*), $\circ>>$; (4) *spirolobous*, as in (1) but cots. once folded, $\circ\parallel\parallel$; (5) *diplecolobous*, ditto twice or more folded, $\circ\parallel\parallel\parallel\parallel$.

For plants of economic value see esp. Brassica (which gives a number of valuable vegetables), Sinapis, Nasturtium, Lepidium, &c. All C. are harmless, and most are rich in sulphur compounds (to which the smell of boiling cabbages is due), and are thus useful in scurvy, &c.

Classification and chief genera (after Prantl):

The grouping of the smaller divisions of the fam. and the defining of the genera is a most difficult task. Many classifications have been devised. Prantl (in *Nat. Pfl.*) bases his largely upon the hairs borne on the leaves. Others rely on characters of fruit and embryo, &c. In any case the identification of a cruciferous genus is a difficult matter.

A. Hairs simple or none: no glandular hairs.

1. *Thelypodieae* (stigma equally developed all round; style undivided or prolonged above middle of cpls., or turned back): Pringlea, Thelypodium, Heliophila.
2. *Sinapeae* (stigma better developed over placentae): Subularia, Lepidium, Iberis, Cochlearia, Alliaria, Sisymbrium, Cakile, Isatis, Vella, Sinapis, Brassica, Raphanus, Crambe, Nasturtium, Cardamine, Lunaria.

B. Hairs branched (a few exceptions): sometimes also glandular hairs.

3. *Schizopetaleae* (stigma equal all round): Schizopetalum, Physaria.
4. *Hesperideae* (stigma better developed over placentae): Capsella, Draba, Arabis, Erysimum, Cheiranthus, Alyssum, Anastatica, Malcomia, Hesperis, Matthiola, Conringia.

Cruckshankia Hook. et Arn. Rubiaceae (1. 2). 5 Chili.

Cruddasia Prain. Leguminosae (111. 10). 1 N. India.

Crudia Schreb. (*Apalaton* Aubl.). Legumin. (11. 3). 20 trop.

Cruentus (Lat.), blood coloured.

Crula Nieuwland (*Acer* p.p.). Aceraceae. 7 E. As.

Crumenaria Mart. Rhamnaceae. 5 trop. Brazil.

Crunocallis Rydberg (*Claytonia* p.p.). Portul. 1 Arct. As. Am.

Crupina Dill. ex L., Cass. Compositae (11). 2 S. Eur. to Persia.

- Crusea** Cham. et Schlecht. Rubiaceae (II. 10). 10 Mex., C. Am.
Crustaceous, hard and brittle.
Cruzia Phil. Labiatae (VI). 1 Patagonia.
Crymium (Cl.), a polar barren formation.
Cryosophila Blume (*Copernicia* BH.). Palmae (I. 2). 1 Mex.
Cryphiacanthus Nees (*Ruellia* p.p.). Acanth. (IV. A). 10 S. Am.
Crypsis Ait. Gramineae (8). 1 Medit.
Cryptadenia Meissn. Thymelaeaceae. 5 Cape Col. Cult. orn.
Cryptandra Sm. Rhamnaceae. 30 temp. Austr.
Cryptangium Schrad. Cyperaceae (II). 20 trop. Am.
Cryptantha Lehm. (*Eritrichium* BH.). Borag. (IV. 2). 80 Pacif. Am.
Cryptanthe Benth. et Hook. f. = preceding.
Cryptanthopsis Ule. Bromeliaceae (4). 2 Brazil (Bahia).
Cryptanthus Otto et Dietr. Bromeliaceae (4). 10 Brazil. Cult. orn. fol.
Cryptarrhena R. Br. Orchidaceae (II. 19). 3 W.I., Guiana, Mex.
Crypteronia Blume. Sonneratiaceae (Lythr. BH.). 4 Malaya.
Cryptocarpus H. B. et K. Nyctaginaceae. 2 W. coast Am.
Cryptocarya R. Br. Lauraceae (II). 60 trop. and subtrop. The fr. of *C. moschata* Nees et Mart. (Brazilian nutmegs) used as spice.
Cryptocentrum Benth. (*Mystacidium* EP.). Orchid. (II. 20). 1 Ecuador.
Cryptochilus Wall. Orchidaceae (II. 5). 2 Himalaya.
Cryptochloris Benth. (*Tetrapogon* EP.). Gramin. (II). 1 Patagonia.
Cryptocoryne Fisch. Araceae (VII). 20 Indomal. Marsh plants.
 Some sp. are apparently 'viviparous' in their germination, like mangroves (see Goebel's *Pflanzenbiol. Schild.* I. p. 132).
Cryptodiscus Schrenk. Umbelliferae (III. 4). 4 W. As.
Cryptogamae. A term used to distinguish those pl. which do not produce seeds. All the higher C. exhibit alternation of generations (see *Pteridophyta*), and the distinction between them and Phanerogams depends on the fact that in C. the *macrospore or spore falls out of its sporangium*, germinates upon the ground or in water and gives rise to an *independent* ♀ (or ♂) prothallus; in the P. on the other hand, it does not do so.
 The C. form 3 great groups, Thallophyta, Bryophyta, and Pteridophyta, each usu. regarded as equivalent to Spermatophyta.
Cryptogamae Vasculares = Pteridophyta.
Cryptogramma R. Br. (*Allosorus* Bernh.). Polypodiaceae. 5 Eur., As., Am. *C. crispa* R. Br. (parsley-fern, curled rockbrake) Brit.
Cryptogyne Hook. f. Sapotaceae (I). 1 Madag.
Cryptolepis R. Br. Asclepiadaceae (I). 20 palaeotrop.
Cryptomeria D. Don. Coniferae (Pinaceae; see C. for gen. char.). 1 Japan, *C. japonica* D. Don. (Japanese cedar), often cult. Timber good.
Cryptophaseolus O. Ktze. (*Canavalia* p.p. EP.). Legum. (III. 10). 1 Annam.
Cryptophoranthus Barb. Rodr. (*Pleurothallis* BH.). Orchid. (II. 8). 10 trop. Am., W.I.
Cryptophragmium Nees (*Gymnostachyum* BH.). Acanth. (IV. B). 15 trop. As.
Cryptopus Lindl. Orchidaceae (II. 20). 1 Madag.

- Cryptosepalum** Benth. Leguminosae (II. 3). 8 trop. Afr.
Cryptospora Kar. et Kir. Cruciferae (4). 1 W. As.
Cryptostegia R. Br. Asclepiadaceae (1). 2 trop. Afr., Madag.
Cryptostemma R. Br. (*Arctotis* p.p. *EP.*). Comp. (10). 3 S. Afr.
Cryptostephanus Welw. Amaryllidaceae (1). 2 trop. Afr.
Cryptostylis R. Br. Orchidaceae (II. 2). 7 Indomal.
Cryptotaenia DC. Umbelliferae (III. 5). 3 Canada, Calabria, Cameroons (an almost impossible distribution; cf. Willis in *Ann. Bot.* 1916-7).
Cryptotaeniopsis Dunn (*Carum* p.p. in part). Umb. (III. 5). 10 China.
Ctenanthe Eichl. Marantaceae. 10 trop. Am.
Ctenium Panz. Gramineae (II. 1). 7 Am., Afr., Masc.
Ctenodon Baill. (*Aeschynomene* p.p. *EP.*). Legum. (III. 7). 1 Brazil.
Ctenolophon Oliv. Linaceae (formerly Olac.). 2 Malay Peninsula.
Ctenophrynum K. Schum. Marantaceae. 1 Madag.
Ctenophyllum Rydb. (*Phaca* p.p.). Leguminosae (III. 6). 1 N. Am.
Ctenopsis De Notar. (*Festuca* p.p. *EP.*). Gramin. (10). 1 trop. Afr.
Cuba bark (W.I.), **bast**, *Hibiscus elatus* Sw.; **-hemp** (Aust.), *Furcraea*.
Cubanthus Millspaugh (*Pedilanthus* p.p.). Euphorb. (A. II. 8). 2 Cuba.
Cubeba Raf. = *Piper* L. (*Piper*).
Cubebs, *Piper Cubeba* L.
Cubilia Blume. Sapindaceae (inc. sed.). 2 Phil. Is., Celebes.
Cuckoo flower, *Cardamine*, &c.; **-pint**, *Arum maculatum* L.
Cucubalus (Tourn.) L. Caryophyllaceae (II. 1). 1, *C. baccifer* L., N. temp. (introd. in Brit.). Fr. a berry.
Cucullaria Schreb. = *Vochysia* Juss. (*Vochys*).
Cucullate, hooded, cowled.
Cucullus, *Asclepiadaceae*.
Cucumber, *Cucumis sativus* L.; **calabash-**, *Lagenaria*; **squirting-**, *Ecballium*; **-tree** (Am.), *Magnolia*.
Cucumeropsis Naud. Cucurbitaceae (2). 2 trop. W. Afr.
Cucumis (Tourn.) L. Cucurb. (3). 3 trop., subtrop. *C. Melo* L. (melon), *C. sativus* L. (cucumber) cult. from early times. Tendrils simple, regarded as of l. nature (see fam.), the stem portion suppressed.
Cucurbita (Tourn.) L. Cucurbitaceae (3). 10 Am., but many so long cult. that their origin is doubtful. For tendrils see fam. Fls. monoecious. Germination interesting. On the lower side of the hypocotyl a peg is formed which holds one side of the testa firmly while the expansion of the plumule splits off the other side. The position of the peg is determined by gravity.
C. Pepo L. is the pumpkin, with its vars. the vegetable marrow and squash; *C. maxima* Duchesne the giant pumpkin, cult. in N. Am.
Cucurbitaceae (*EP.*, *BH.*). Dicots. (Sympet. Cucurbitales; Polypet. Passiflorales *BH.*). 90 gen., 750 sp., wanting in the colder regions, most abundant in the trop., chiefly climbing ann. herbs with very rapid growth and abundance of sap in their stems and other tissues. L. alt. roundish, entire or lobed. They climb by tendrils, about whose morphological nature there has been much discussion; they have been considered by various authors as "roots, stems, leaves,

stipules, shoots, flower-stalks or organs sui generis." According to Müller (*Nat. Pfl.*) the tendrils of *Cucurbita Pepo*, with their frequent abnormalities, give a proof of their true nature. Every variety is found, from simple threads to long leafy tendrils, in which the l. show all transitions to tendrils. Müller, therefore, considers the twining portion of the tendril to be a met. l., the lower stiff portion a stem. The tendrils of *C.* are very sensitive and show very well all the phenomena of tendril-climbing.

Fls. diclinous, rarely ♀, in infls. of various types (see *Nat. Pfl.*, or Eichler, *Blüthendiagr.*). K and C typically (5) each, reg.; A typically 5, but great var. is introduced by cohesions, &c.; it is almost always ♂. In Fevillea we find 5 sta. with biloc. anthers, the simplest type; it is noteworthy that the usual 4-loc. anther never occurs in *C.*, and no trace of the missing loc. is to be found in either lobe of the anther of Fevillea. In the rest of the fam. the A is more complex. In Thladiantha two pairs of sta. stand apart from the fifth sta. In Sicydium these pairs show union of their members at the base, and in others the union is more complete, until, as in Bryonia, &c., the A apparently has only 3 sta., of which 2 have 4-loc. anthers due to unions. The more the sta. depart from the simple type the more curved do the loculi of the anthers become, till in Cucurbita, &c. the pollen-sacs are twisted in a most extraordinary manner (*cf.* Columellia). In Cyclanthera the sta. are all united into a column with two ring-shaped pollen chambers running round the top (*cf.* the flowers of Cyclanthus). $\bar{G}$ 1—10-loc., with 1— ∞ anat. ov. in each loc.; the most common type is, however, a 3-loc. ovary with axile plac. projecting deep into the cavity. Stigmas as many as cpls., usually forked. Fr. usu. fleshy, of the type of the melon or cucumber—berry-like, sometimes called a pepo. Seeds exalb. In Zanonia, Ecballium, Cyclanthera, &c. (*q.v.*), the mode of seed-dispersal is interesting. Several have ed. fr., *e.g.* Cucurbita, Cucumis, Sechium, Lagenaria, &c.

The relationships of this fam. have been much disputed. It has been placed near Passifloraceae, Loasaceae and Begoniaceae, but most probably it comes near to the Campanulaceae.

Classification and chief genera (after Pax):

A. Pollen-sacs not fused into a ring.

a. Sta. free or only united at base.

1. *Fevilleae* (sta. 5, rarely 4): Fevillea, Zanonia, Thladiantha.
2. *Melothrieae* (sta. 3, rarely 2 or 4; pollen-sacs straight or slightly curved): Melothria, Telfairia.
3. *Cucurbiteae* (do., but pollen-sacs S or U shaped): Acanthosicyos, Momordica, Luffa, Bryonia, Ecballium, Cucumis, Lagenaria, Trichosanthes, Cucurbita.

b. Sta. united into a column.

4. *Sicyoideae*: Echinocystis, Sechium, Sicyos.

B. Pollen-sacs fused into a ring.

5. *Cyclanthereae*: Cyclanthera (only genus).

Cucurbitaceous, gourd-like.

Cucurbitales (*EP.*). The 9th order of Dicots. Sympetalae.

Cucurbitella Walp. Cucurbitaceae (2). 4 temp. S. Am.

- Cudrania** Tréc. Moraceae (11). 4 Japan to Austr., New Cal.
Cudweed, *Gnaphalium*.
Culcasia P. Beauv. Araceae (1). 15 trop. Afr.
Culcitium Humb. et Bonpl. Compos. (8). 20 Andes. Like Espeletia.
Cullenia Wight. Bombacaceae. 1 India, Ceylon.
Cullumia R. Br. Compositae (10). 15 S. Afr.
Cullumiopsis Drake del Castillo. Compositae (4). 1 Madag.
Culm, the stem of a grass.
Cultivation, see Economic and ornamental plants.
Culver's physic, -root, *Veronica virginica* L.
Cumbu, *Pennisetum typhoideum* Rich.
Cumin seed, *Cuminum Cyminum* L.
Cumingia Vidal. Bombacaceae. 1 Phil. Is.
Cuminia Colla. Labiatae (VI). 3 Juan Fernandez.
Cuminum (Tourn.) L. Umbelliferae (7). 1 C: *Cuminum* L., Medit.
The fr. (cumin seeds) are sometimes used like caraway seeds.
Cumminsia King ex Prain = Cathcartia Hk. f. (Papav.).
Cuneal, cuneate, cuneiform, wedge-shaped.
Cunila L. Labiatae (VI). 15 Am.
Cunninghamia R. Br. Coniferae (Pinaceae; see C. for genus characters). *C. sinensis* R. Br., the only sp., in S. China and Cochin-China.
Cunonia L. Cunoniaceae. 1, *C. capensis* L., S. Afr. It shows good bud-protection by stipules.
Cunoniaceae (EP.; *Saxifragaceae* p.p. BH.). Dicot. (Archichl. Rosales). 21 gen., 120 sp., chiefly between 13° and 35° S. Shrubs and trees with opp. or whorled leathery l., stip. (the stip. often united in pairs as in Rubiaceae). Fl. small, usu. ♂. Receptacle usu. flat. K 4—5; C 4—5, usu. smaller than calyx, often absent; A 8—10 or ∞ or 4—5; G usu. (2), rarely 2; ovary usu. 2-loc., generally with ∞—2 ovules in 2 rows in each loc. Fruit usu. a capsule, rarely drupe or nut. Endosperm. *Chief genera*: Cunonia, Weinmannia.
Cunuria Baill. Euphorbiaceae (A. II. 3). 2 N. Brazil.
Cup. a hollow floral receptacle, *Myrtaceae*, *Rosaceae*, &c.; **-flower**, *Nierembergia*; **-plant** (Am.), *Silphium perfoliatum* L.
Cupania L. Sapindaceae (1). 32 warm Am. Wood of some is useful. *C. sapida* Voigt (*C. edulis* Schum. et Thonn.) = Blighia.
Cupaniopsis Radlk. Sapindaceae (1). 28 Austr., Polynesia.
Cuphea P. Br. Lythraceae. 200 Am. L. decussate; usu. there is one fl. at each node, standing *between* the two l.; this is really the axillary fl. of the l. below, and its peduncle is 'adnate' to the main stem. Many covered with sticky glandular hairs. Cult. orn. fl.
Cupheanthus Seem. (*Jambosa*, *Syzygium* p.p. ? EP.). Myrtaceae (1). 1 New Caled.
Cuphocarpus Decne. et Planch. Araliaceae (1). 1 Madag.
Cupia DC. = Randia L. (Rubiaceae).
Cupirana Miers (*Coupoi* BH.). Apocynaceae (1. 1). 2 Guiana.
Cuprea bark, *Remijia*.
Cupreous, copper-coloured.
Cupressaceae (Warming) = Pinaceae § Cupresseae.
Cupressus Tourn. ex L. [Synonymy: *C. fastigiata* DC. = *C. semper-*

virens L.; *C. pendula* Staunt. = *C. funebris* Endl.; *C. nootkatensis* Lamb. = *Chamaecyparis nutkatensis* Spach.; *C. thujoides* L. = *Ch. sphaeroidea* Spach.; *C. juniperoides* L. = *Callitris arborea* Schrad.; *C. japonica* L. = *Cryptomeria jap.* Don.

Coniferae (Pinaceae; see *C.* for gen. char.). 12 Medit., As., N.Am. The gen. habit is xero., the l. being much reduced and closely appressed to the stems. *C. sempervirens* L. is the cypress of the Medit. region; *C. funebris* Endl. the funereal cypress of China and Thibet, with 'weeping' branches; *C. macrocarpa* Hartn. (Monterey cypress, Calif.) is largely planted for timber and shade in warm countries. Several yield useful timber, e.g. *C. Lawsoniana* Murr. (Calif., Oregon), *C. Lindleyi* Klotzsch (Mexico), *C. torulosa* Don (W.Himal.), *C. sempervirens*, &c. (see Camus, *Les Cyprès*, Paris, 1914).

Cupule, *Fagaceae*, *Betulaceae*.

Cupuliferae (BH.) = *Betulaceae* + *Fagaceae*; (Warming) = *Fagaceae*.

Curanga Juss. *Scrophulariaceae* (II. 6). 1 Indomal.

Curare, *Strychnos toxifera* Schomb.

Curatella L. *Dilleniaceae*. 5 trop. Am., W. I.

Curculigo Gaertn. *Amaryllidaceae* (III). 15 palaeotrop., S. Afr.

Curcuma L. *Zingiber*. (I). 35 palaeotrop. *C. angustifolia* Roxb. tubers furnish east indian arrowroot. *C. longa* L. yields the yellow dye turmeric (dried and ground rhiz.). The tubers of *C. Zedoaria* Rosc. yield zedoary, used in the East as a tonic and perfume.

Curima O. F. Cook (*Bactris EP.*). *Palmae* (IV. 2). 2 W. Indies.

Curinila Roem. et Schult. *Asclepiadaceae* (inc. sed.). 1 Malaya.

Curled rockbrake, *Cryptogramma crispa* R. Br.

Curly greens, *Brassica oleracea* L. var.

Curmeria Linden et André = *Homalomena* Schott p.p. (Arac.).

Curraniodendron Merrill. *Saxifragaceae* (V). 1 Phil. Is.

Currant, *Ribes*, *Vitis*; **Australian-**, *Leucopogon*; **black-**, *Ribes nigrum* L.; **-bush** (W.I.), *Clidemia*, *Miconia*, &c.; **flowering-**, *Ribes sanguineum* Pursh; **-tree** (W.I.), *Beureria*, *Jacquinia*.

Curroria Planch. *Asclepiadaceae* (I). 1 S. Afr.

Curry-leaf (Ceyl., India), *Murraya Koenigii* Spreng.

Curtia Cham. et Schlecht. *Gentian*. (I). 10 Guiana to Uruguay.

Curtisia Ait. *Cornaceae*. 1 S. Afr., *C. faginea* Ait., yielding a hard and useful timber (assegai-wood).

Curvembryae. The 1st series (BH.) of *Monochlamydeae*. The 7th cohort (Warming) of *Choripetalae*.

Cuscuaria Schott (*Scindapsus* p.p. EP.). *Araceae* (II). 1 Malay Archipelago.

Cuscus (khas-khas), *Vetiveria zizanioides* Stapf.

Cuscuta (Tourn.) L. *Convolvulaceae* (II). 100 trop. and temp.; 3 Brit. (dodder, scald, &c.). Many have extended their boundaries through being carried about with their host plants. Leafless and rootless total parasites. The stem twines and is sensitive to contact like a tendril so that it clasps the support tightly; it rarely makes more than three turns about the same branch of the host. At the points in close contact suckers are developed which penetrate the tissues of the host, growing into organic union with them and drawing off all the food

materials required by the parasite, which has no green tissue of its own. The seeds of *C.* germinate later than those of the host plant; a very short anchorage root is formed and the stem nutates in search of a host; as soon as it has clasped one the root dies away. Much damage is often done by these plants: most of the Brit. sp. confine themselves to particular host pl., but others attack a variety of pl. For details see Kerner's *Nat. Hist. of Plants*, vol. 1., and papers by Peirce in *Ann. of Bot.* 1893—4.

Cushion plants, with cushion-like growth reducing evap.

Cusickia M. E. Jones. Umbelliferae (III. 6). 1 N. Am.

Cusparia Humb. Rutaceae (I). 22 S. Am. *C. febrifuga* Humb. (*C. trifoliata* Eng.) yields Angostura or Cusparia bark, sometimes used in place of cinchona bark.

Cuspidaria DC. Bignoniaceae (I). 5 Brazil, Bolivia.

Cuspidate, with rigid point.

Cussonia Thunb. Araliaceae (I). 25 S. and trop. Afr., Madag.

Custard-apple, *Anona squamosa* L., *reticulata* L.

Cutandia Wilk. Gramineae (10). 6 Medit.

Cutch, *Acacia Catechu* Willd., *Rhizophora*.

Cuthbertia Small (*Tradescantia* p.p.). Commelin. 2 N. Am.

Cuticle, the thin detachable skin of a plant.

Cutting grass (W.I.), *Scleria flagellum-nigrorum* Berg.

Cuttisia F. Muell. Saxifragaceae (V). 1 E. Austr.

Cuviera DC. Rubiaceae (II. 1). 10 trop. Afr. Several are ant-inhabited with hollow swellings of the stem above the nodes.

Cyamopsis DC. Leguminosae (III. 6). 3 trop. Afr., As. *C. psoraloides* DC. is largely cultivated in India as fodder (guar).

Cyanaeorchis Barb. Rodr. Orchidaceae (II. 7). 1 Brazil.

Cyanandrium Stapf. Melastomaceae (I). 2 Borneo.

Cyananthus Wall. Campanul. (I). 10 Mts. mid. and E. As. Ov. sup.

Cyanastraceae (*EP.*, *Pontederiaceae* p.p. *BH.*). Monocots. (Farinosae). Only genus *Cyanastrum*, *q.v.*

Cyanastrum Oliv. Cyanastraceae. 5 trop. Afr. Herbs with tuber or tuberous rhiz., and racemes or panicles of ♂ reg. fls. P (3 + 3), A (6), $\bar{G}$ (3), 3-loc. with 2 ov. in each. Fr. 1-seeded. Perisperm.

Cyanea Gaudich. Campanulaceae (III). 28 Sandw. Is.

Cyanella L. Amaryllidaceae (III). (Haemodor. *BH.*) 7 S. Afr.

Cyaneus (Lat.), full blue.

Cyanocarpus Bailey. Proteaceae (II). 2 Queensland.

Cyanodaphne Blume. Lauraceae (II). 2 Malay Archipelago.

Cyanostegia Turcz. Verbenaceae (3). 4 W. Austr.

Cyanothyrsus Harms. (*Daniella* p.p.), Legumin. (II. 3). 3 trop. Afr.

Cyanotis D. Don. Commelinaceae. 35 palaeotrop.

Cyanus (Tourn.) L. = *Centaurea* L. (Comp.).

Cyathanthus Engl. Moraceae (I). 1 Cameroons.

Cyathea Sm. Cyatheaceae. 240 trop. and subtrop. Tree ferns, forming a char. feature in the scenery of various regions. *C. medullaris* Sw. (N.Z.) and *C. dealbata* Sw. are well known. Their pulpy pith is eaten by the natives.

Cyatheaceae. Filicineae Leptosporangiatæ (Homosporous). 9 gen. with 360 sp. chiefly trop. and subtrop., mostly tree ferns with stout

erect stems, covered with adv. roots and a palm-like crown of l. at the top. These show circinate vernation, &c., very well. The sori are marginal or on the under side of the l., naked or with a cup-shaped indusium; the sporangia are shortly stalked and have a complete excentric annulus. *Chief genera*: *Cyathea*, *Alsophila*, *Dicksonia*, *Hemitelia*.

Cyathium, an infl. reduced to look like a single fl., *Euphorbia*, *Anthostema*.

Cyathocalyx Champ. ex Hook. f. et Thoms. Anon. (4). 9 Indomal.

Cyathocepalum Nakai. Compositae (8). 2 Japan, Manchuria.

Cyathochaeta Nees. Cyperaceae (11). 4 Austr.

Cyathocline Cass. Compositae (3). 2 India.

Cyathodes Labill. (*Styphelia* p.p. *EP.*), Epacrid. 15 Austr. Polynes.

Cyathogyne Muell.-Arg. Euphorbiaceae (A. I. 1). 5 trop. Afr.

Cyathopsis Brongn. et Gris. (*Styphelia* p.p. *EP.*). Epacridaceae (3). 2 Indomal.

Cyathopus Stapf. Gramineae (8). 1 Indomal.

Cyathoselinum Penth. (*Seseli* p.p. *EP.*). Umbellif. (III. 5). 1 Dalmatia.

Cyathostelma Fourn. Asclepiadaceae (II. 1). 2 Brazil.

Cyathostemma Griff. Anonaceae (1). 7 Malaya.

Cyathula Lour. Amarantaceae (2). 10 Afr., As., S. Am.

Cybele, a flora.

Cybiantus Mart. Myrsinaceae (11). 35 trop. Am.

Cybistax Mart. Bignoniaceae (2). 3 S. Am. The l. of *C. Sprucei* K. Sch. are used as a blue dye, by boiling them with the cloth.

Cycadaceae (chiefly after Eichler). Gymnospermae. 9 genera with about 75 sp., the survivors of a group of plants which in past ages figured more largely in the flora of the earth, reaching their maximum about the end of the Triassic and beginning of the Jurassic period. They represent the lowest type of living seed-plants and in appearance and habit are like tree-ferns. The stem is usu. short and stout, only growing to any noteworthy height in *Cycas* itself, and is often tuberously swollen; it shows a secondary growth in thickness. It has a long primary tap root. In some sp. a sort of felt-work of roots is formed at the base of the stem, and a number of short lat. branches of these stand erect and may emerge from the soil (see *Nat. Pfl.*). The stem has usu. a crown of leaves, and its lower portion is covered with scales. There are, in all except a few sp. of *Macrozamia*, two sorts of l., foliage- and scale-l., borne spirally upon the stem, and alt. with one another, as a rule several circles of scales before each circle of foliage l., which they protect in the bud. The scales are really l. bases whose blades abort. The foliage l. are very char. They possess usu. a thickened, woody, $\pm$ sheathing base, which often persists after the fall of the rest of the l. There is a stout rachis or petiole, frequently thorny at the base, the thorns being 'metamorphosed' leaflets. Upon its upper side are two grooves, from which spring the leaflets, which may or may not be opp. to one another; there is usu. no term. leaflet. The leaflets may be entire or toothed and are usu. very rigid and leathery. Three types of nervature occur:

- (1) midrib, no lateral nerves: *Cycas*.
- (2) midrib and lateral nerves: *Stangeria*.
- (3) numerous parallel or wavy, simple or forked nerves running longitudinally: the other genera.

The fls. are dioec. and usu. take the form of *cones*; these are term., and so the stem becomes a sympodium, except in *Cycas* and some spp. of *Encephalartos*, &c., where the stem 'grows through' the fl or fls. The size of the cones varies considerably. Each consists essentially of a central axis bearing a number of fertile l. or sporophylls; occasionally the lowest l. are sterile as in *Coniferae*. In the ♂ cone, the l. (scales) are generally of a sort of nail shape (*cf.* *Equisetum*), and bear *stori* upon the lower side, each of 2—6 sporangia (pollen-sacs), arranged with the lines of dehiscence radiating from the common centre. In the ♀ cone the scale (cpl.) is of somewhat similar shape but bears as a rule only two sporangia (ovules), whose apices are directed towards the axis of the cone. *Cycas* (*q.v.*) has no proper cone, but the stem bears a whorl of cpls. in place of ordinary l. The ovule is large, orthotr. with one integument. The pollen is carried by the wind to the micropyle, where it germinates.

The ov. grows into a large seed; testa two-layered, the inner woody, the outer fleshy. Endopleura on the seed. Nucellus reduced to a thin cap on the top of the seed, the bulk of which is endosp., with straight embryo in centre. 2 cots., usu. united at the tips.

The C. are exclusively trop. and subtrop. Of the genera, 4, 7, 8, 9 are from Am., 3 and 6 Austr., 2 and 5 Afr., whilst *Cycas* is found in E. Ind., Austr., and the islands of Ind. and Pacif. Oceans.

Classification and Genera (after Eichler):

- I. *Cycadeae* (cpls. with 8—4, rarely 2 ovules; stem growing through the ♀ fl.; leaflet with midrib only): 1. *Cycas*.
- II. *Zamiaceae* (ovules 2; stem not growing through):

Pinna pinnately nerved	2. <i>Stangeria</i> .
„ longitudinally nerved	
Leaf bipinnate	3. <i>Bowenia</i> .
„ once pinnate	
Ov. on swelling of cpl.	4. <i>Dioon</i> .
„ sessile	
Scales peltate. Afr.	5. <i>Encephalartos</i> .
„ pointed. Austr.	6. <i>Macrozamia</i> .
„ peltate. Am.	7. <i>Zamia</i> .
„ two-horned	8. <i>Ceratozamia</i> .
„ in ♂ flat, in ♀ peltate.	9. <i>Microcycas</i> .

***Cycas* L.** *Cycadaceae*. 16 trop. E. Ind., Austr., Polynes. For gen. char., &c., see fam. The ♀ pl. does not bear a cone, but a whorl of cpls. of a woolly brown appearance; in notches upon the margins of these are the naked ovules, usu. 4—8 in number. Stems reaching 50 ft. in some sp., usu. unbranched. The pith of *C. circinalis* L. (trop. As., sometimes called sago-palm) and *C. revoluta* Thunb. (Japan) yields a sago. Literature in Coulter and Chamberlain, *Morphology of Gymnosperms* (*q.v.*).

Cyclachaena Fresen. (*Iva* EP). *Compositae* (5). 2 N. Am.

Cycladenia Benth. *Apocynaceae* (11. 1). 2 California.

Cyclamen (Tourn.) L. Primulaceae (2). 12 Eur. (mostly alpine), Medit. *C. europaeum* L. Brit. (sow-bread). There is a stout corm (*cf.* Colchicum) due to thickening of the hypocotyl. The P-lobes are bent back and the fl. is pend., with loose-pollen mechanism (*cf.* Acanthus, Erica). After fert. the stalk usu. coils up spirally, drawing the ripening fr. down to the soil (*cf.* Vallisneria); in *C. persicum* Sibth. et Sm. it bends over and forces the fr. into the ground (*cf.* Arachis). Cult. orn. fl.

Cyclanthaceae (EP., BH.). Monocots. (Synanthae; Nudiflorae BH.). 6 gen., 45 sp. trop. Am.; they help to char. the flora of this region. Climbers, epiph., rhiz.-herbs, or small shrubs, of palm-like habit, with curious spadix infls. on which the ♂ and ♀ fls. alt. in various ways (see Carludovica and Cyclanthus). Fr. multiple, fleshy. Endosp. The fam. is nearly related to Palmae, Pandanaceae and Araceae. *Chief genera*: Carludovica, Cyclanthus.

Cyclanthera Schrad. Cucurbitaceae (5). 30 trop. Am. Sta. combined into a column as in section 4, but here the anther-loculi fused into 2 ring-shaped loculi running completely round the top of the column. *C. explodens* Naud. has explosive fr. (*cf.* Ecballium); the pericarp is extremely turgid on its inner surface, and the fr. dehisces into valves, each of which rolls back on itself with a jerk.

Cyclantheropsis Harms. (*Gerrardanthus* p.p.). Cucurb. (4). 1 trop. Afr.

Cyclanthus Poit. Cyclanthaceae. 4 trop. Am., W. I. The rhiz. bears large l., forked into two at the top. Infl. term. on a long stalk, as a large cylindrical spadix with big bracts at base, resembling a number of discs piled upon one another, with their edges sharpened to a thin rim. In some two || spirals compose the spadix, each with a sharpened edge. In the former case every other disc bears ♂ fls., in the latter one of the spirals, the other being ♀. The ♂ fls. occupy a groove at the edge of the rim; each has 6 sta. and no P. The ♀ fls. are embedded in the disc; ovaries united into a long continuous chamber running all round the disc and containing numerous placenta. Ps united all round the disc; on their inner sides they bear stds. Fr. multiple, consisting of a number of seeds embedded in a general fleshy mass formed of ovaries and spadix. *Cf.* Carludovica.

Cyclea Arn. Menispermaceae. 12 trop. As., Madag.

Cyclic (fl.), with all members in whorls.

Cyclo- (Gr. pref.), circle; **-spermous**, with embryo coiled round endosp.

Cyclobothra D. Don in Sweet = Calochortus Pursh (Lili.).

Cyclocampe Steud. Cyperaceae (11). 3 Mauritius, New Cal. (?).

Cyclocarpa Afzel., emend. Urban. Leguminosae (III. 7). 1 W. Afr.

Cyclocheilon Oliv. (*Holmskioldia* Retz.). Verben. (4). 2 trop. Afr.

Cyclocotyla Stapf. Apocynaceae (I. 1). 1 Congo.

Cyclodium Presl. Polypodiaceae. 2 W. I., trop. S. Am.

Cyclolepis Gill. Compos. (12). 1 temp. S. Am. Char. in N. Patag.

Cyclolobium Benth. Leguminosae (III. 8). 4 Brazil, Guiana.

Cycloloma Moq. Chenopodiaceae (A). 1 Central N. Am.

Cyclonema Hochst. = Clerodendron L. p.p. (Verb.).

Cyclopeltis J. Sm. Polypodiaceae. 4 trop. E. As. and Am.

Cyclophorus Desv. (*Nipholobolus* Kaulf.). Polypod. 90 trop. and sub trop.

- Cyclophyllum** Hook. f. Rubiaceae (II. 1). 1 New Caled.
- Cyclopia** Vent. Leguminosae (III. 2). 10 S. Afr.
- Cycloptychis** E. Mey in Drège. Cruciferae (1). 2 S. Afr.
- Cyclospathe** O. F. Cook. Palmaceae (IV. 1). 1 Bahamas.
- Cyclostemon** Blume. Euphorbiaceae (A. 1. 1). 35 trop. Afr., As.
- Cycnia** Griff. Rosaceae (inc. sed.). 1 Burma.
- Cyeniopsis** Engl. (*Browallia* p.p.). Scrophular. (III. 2). 3 trop. Afr.
- Cyenum** E. Mey. Scrophulariaceae (III. 2). 15 trop. and S. Afr.
- Cyenoche** Lindl. Orchidaceae (II. 11). 8 trop. Am. Fl. like that of *Catasetum* in mechanism and polymorphism.
- Cydista** Miers (*Bignonia* B.H.). Bignon. (1). 2 trop. Am.
- Cydonia** Tourn. ex Mill. (*Pyrus* Tourn. B.H.). Rosaceae (II). 5 Eur., N. As. *C. vulgaris* Pers. (*P. Cydonia* L.) is the quince (ed. fr.); *C. japonica* Pers. (*P. japonica* Thunb.) cult. orn. wall shrub.
- Cylicodaphne** Nees = *Litsea* Lam. p.p. (Laur.).
- Cylicodiscus** Harms. (*Erythrophloeum* p.p.). Legum. (I. 5). 1 Gaboon.
- Cylicomorpha** Urb. (*Jacaratia* p.p.). Caricaceae. 2 trop. Afr.
- Cylindria** Lour. Inc. sed. 1 China.
- Cylindrocarpa** Regel. (*Phyteuma* p.p. EP.). Campan. (I. 1). 1 W. As.
- Cylindrocline** Cass. Compositae (4). 1 Mauritius.
- Cylindrolepis** Boeck. Cyperaceae (1). 1 S. Afr.
- Cylindropsis** Pierre (*Carpodinus* p.p.). Apocyn. (I. 1). 3 trop. Afr.
- Cylindrosolen** O. Ktze. = next.
- Cylindrosolenium** Lindau. Acanthaceae (IV. B). 1 Peru.
- Cylista** Ait. Leguminosae (III. 10). 4 palaeotrop.
- Cymaria** Benth. Labiatae (1). 3 Malaya, Burma:
- Cymbalaria** Medic. (*Linaria* B.H.). Scroph. (II. 3). 9 Medit. W. Eur.
- Cymbalariella** Nappi (*Saxifraga* p.p.). Saxifr. (1). 12 N. temp. |*.
- Cymbaria** L. Scrophulariaceae (III. 3). 3 Russia, temp. As.
- Cymbia** Standley (*Krigia* p.p.). Compositae (13). 1 S.W. U. S.
- Cymbidium** Sw. Orchidaceae (II. 17). 30 Afr. to Austr. and Japan. Cult. orn. fl.
- Cymbiform**, boat-shaped.
- Cymbocarpa** Miers (*Gymnosiphon* B.H.). Burmanniaceae. 1 trop. S. Am.
- Cymbocarpum** DC. Umbelliferae (III. 6). 4 W. As.
- Cymbonotus** Cass. (*Arctotis* p.p. EP.). Compositae (10). 1 temp. Austr.
- Cymbopetalum** Benth. Anonaceae (2). 5 Mexico, trop. Am.
- Cymbopogon** Spreng. (*Andropogon* p.p.). Gramineae (2). 60 trop. Char. of savannas of trop. Afr. Several yield essential aromatic oils, e.g. *C. Nardus* Rendle and others (Ceylon; citronella), *citratus* Stapf (Ceylon, S. India; lemon-grass), *C. Martini* Stapf (India; palma rosa or geranium oil), used in soaps, perfumery, &c. Cf. Stapf, under *Andropogon*.
- Cymbosema** Benth. Leguminosae (III. 10). 1 Brazil.
- Cymbosepalum** Baker. Leguminosae (II. 2). 1 Madag.
- Cyme**, an infl. in which each successive branch ends in a fl. after bearing one or more bracteoles, from whose axils the branching is continued. According to the number of branches borne on each

successive branch, the cyme is termed *mono-*, *di-* or *pleio-chasial*. Dich. cymes occur in Caryophyllaceae, Gentianaceae, &c., and very commonly tend to become monochasial in the later branchings. Monochasia are of four types; if each successive branch is upon the same side of the relatively main axis, and in the same plane, it is a *drepanium*, Juncaceae, &c.; if on the same side but at right angles, a *bostryx* or screw, Hemerocallis, Hypericum, &c.; if it fall alt. on one side and the other in the same plane, a *rhypidium*, Iris, &c.; if at right angles, a *cincinnus*, Boraginaceae, Helianthemum, Hydrophyllaceae, Pentaphragma, Tradescantia, &c.; **cymose**, of cyme nature, *Hydrangea*.

Cymelonema Presl (*Urophyllum* p.p. *EP.*). Rubi. (I. 7). 1 Phil. Is.

Cyminosma Gaertn. = *Acronychia* Forst. (Rut.).

Cymodocea Kon. Potamogetonaceae. 7 trop. and sub trop.

Cymophora Robinson. Compositae (5). 1 Mexico.

Cymophyllus Mackenzie (*Carex* p.p.). Cyperaceae (III). 1 S.E. U.S.

Cymopterus Rafin. Umbelliferae (III. 6). 25 W. N. Am.

Cynanchum L. (incl. *Vincetoxicum* Rupp.). Asclepiadaceae (II. 1). 120 trop. and temp., many twiners, and xero. with fleshy stems and reduced l.; fls. fert. by carrion-flies which get the pollinia attached to their proboscides.

Cynapium Nutt. = *Ligusticum* L. (Umbell.).

Cynara Vaill. ex L. Compositae (II). 11 Medit. *C. Scolymus* L. is the true artichoke (*cf.* *Helianthus*); young fl.-heads enclosed in the invol. bracts, a valuable pot-herb. The blanched summer growth (chards) is also ed. *C. Cardunculus* L. is the cardoon, whose l. are blanched and eaten like celery; it has spread over great areas on the Pampas, where it was introduced.

Cynaropsis O. Ktze. (*Cynara* p.p.). Compositae (inc. sed.). 1 Canaries.

Cyno- (Gr. pref.), dog-.

Cynocrambaceae (*Thelygonaceae*) (*EP. Urticaceae* p.p. *BH.*). Dicots. (Archichl. Centrospermae). One genus, *Cynocrambe* (*q.v.*), which is so anomalous that it has been placed near to Urticaceae (united *BH.*), Phytolaccaceae (united by Warming), Chenopodiaceae, Begoniaceae, Santalaceae, Monimiaceae, &c. (see *Nat. Pfl.*).

Cynocrambe Tourn. ex Adans. (*Thelygonum* L.). Cynocrambaceae (only gen.). 2 Canaries, Medit., C. As. Herbs with fleshy stip. l., the basal opp. Fls. unisex., the ♂ opp. the l., with P 2—5, A 10—30; ♀ in 3-fld. axillary cymes, with P 3—4; G 1, style basal, ov. 1. Drupe. Endosp.

Cynoctonum E. Mey. = *Vincetoxicum* Moench. (*BH.*) = *Cynanchum* L.

Cynodon Rich. Gramineae (II). 3 Austr., 1 *C. Dactylon* Pers. (dog's-tooth or Bermuda grass), cosmop. (incl. Brit.). It grows with creeping stems on sandy soil and is used for binding dunes; useful pasture. Spikes digitate, spikelets 1-fld.

Cynoglossum (Tourn.) L. Boraginaceae (IV. 1). 50 temp. and sub trop. 2 Brit., incl. *C. officinale* (hound's tongue). Formerly offic. Fr. hooked.

Cynomarathrum Nutt. (*Peucedanum* p.p.). Umbell. (III. 6). 5 N. Am.

Cynometra L. Leguminosae (II. 2). 30 trop. *C. cauliflora* L. is a good example of stem-fruited or cauliflory.

Cynomoriaceae (EP.; *Balanophoraceae* p.p. BH). Dicots. (Archichl. Myrtiflorae). Only genus *Cynomorium*, q.v.

Cynomorium Mich. ex. L. Cynomoriaceae. 1 Medit., *C. coccineum* L. Rhiz. brownish, total parasitic herbs with polygamous fls. ♀ fl. with epig. sta. Ovule 1, pend.

Cynorchis Thou. (*Cynosorchis*). Orchid. (II. 1). 15 trop. Afr., Madag.

Cynosciadium DC. Umbelliferae (III. 5). 3 N. Am.

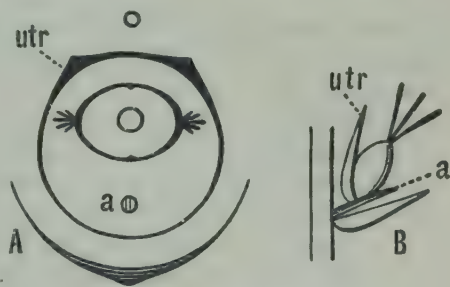
Cynosurus L. Gramineae (10). 5 Old World temp., 2 Brit. (dog's-tail grass), one, *C. cristatus* L., a valuable pasture and fodder.

Cypella Herb. Iridaceae (II. 1). 5 temp. S. Am. One sp. unfolds its fls. in great numbers at definite times.

Cypellium Desv. Inc. sed. 1 Guiana.

Cyperaceae (EP., BH.). Monocots. (Glumiflorae; Glumaceae BH.).

65 gen., 2600 sp., cosmop., chiefly marsh-pl. Grass-like pl. (sedges), mostly perenn. with creeping sympodial rhiz. The new shoot of each year is adnate, for an internode or more, to the parent shoot, so that the branching seems at first sight extra-axillary. The aerial shoot is usu. grass-like, but the stem solid and angular with 3 ranks of l. The l. is sheathing at the base, but the sheath is entire, not split as in a grass. The unit of infl. is again a spikelet; the total infl. may be a spike or panicle as in grasses. In many sedges the spikelet is cymose—a sympodium—and should perhaps be termed a pseudo-spikelet. The fl. is borne in the axil of a glume and may be ♀ or unisexual; it is usu. naked but may have a P of 6 (or ∞) small scales or hairs; A 3, G (3) or (2), 1-loc., with long feathery (anemoph.) stigmas; ovule 1, basal, anatr. In *Carex*, &c., the ♀ fl. is borne in the axil of a second glume (the *utricle*) which closely enwraps it (in the figure it is shown diagrammatically). The fls. are wind-pollinated. Fr. an achene, the testa not adhering to the pericarp. The sedges are of little economic value; see *Cyperus*.



Diagrams of *Carex* (after Eichler). A, diagram of a 2-carpelled ♀ flr.; B, side view of ♀ flr. a. = axis of spikelet; utr. = utricle.

Classification and chief genera (after Engler):

I. *SCIRPOIDEAE* (fls. ♀ in many-fl. spikelets, or single ♂ ♀ with or without trichomes): *Cyperus*, *Eriophorum*, *Scirpus*, *Eleocharis*, *Fimbristylis*.

II. *RHYNCHOSPOROIDEAE* (fls. ♀ or ♂ ♀ with or without trichomes in few-fl. spike-like cymes aggregated into spikes or heads): *Schoenus*, *Cladium*, *Rhynchospora*, *Manisuris*, *Scleria*.

III. *CARICOIDEAE* (fls. ♂ ♀, naked, usu. in many-fl. spikes; ♀ enclosed by utricle): *Carex*, *Uncinia*.

Cyperorchis Blume. Orchidaceae (II. 17). 3 Himal. Cult. orn. fls.

Cyperus L. (incl. *Mariscus* Gaertn.). Cyperaceae (I). 400 trop. and warm temp. (2 Brit.). Herbs with sympodial rhiz. and leafless or leafy shoots above ground. Infl. umbel- or head-like. *C. Papyrus* L. (paper-reed) is a river-side plant with shoots 3—12 feet high. From the stems was made the ancient writing paper, papyrus. The stem was split into thin strips, which were pressed together while still wet. The rhiz. is ed., and also the root-tubers of several sp.; the stems (whole or split) of many are used for basket making, &c.

Cyphel, *Arenaria Cherleria* Hook.

Cyphia Berg. Campanulaceae (II). 25 Afr. [Cyphiaceae, Warming.]

Cyphocarpa Lopriore. Amarantaceae (2). 10 trop. and S. Afr.

Cyphocarpus Miers. Campanulaceae (II). 1 Chili.

Cyphochilus Schlechter. Orchidaceae (II. a. III.). 6 New Guinea.

Cyphochlaena Hackel. Gramineae (4). 1 Madag.

Cyphokentia Brongn. Palmae (IV. 1). 10 New Caled.

Cypholepis Chiov. (*Eragrostis* p.p.). Gramin. (10). 1 Arabia.

Cypholophus Wedd. Urticaceae (3). 10 Malaya, Polynesia.

Cyphomandra Mart. ex Sendtn. Solanaceae (2). 30 S. Am. *C. betacea* Sendtn. (tree tomato) cult. ed. fr.

Cyphomeris Standley (*Lindenia* p.p.). Nyctagin. 2 Mexico.

Cyphophoenix H. Wendl. ex Benth. et Hook. f. Palmae (IV. 1). 2 New Cal.

Cyphosperma H. Wendl. (*Cyphokentia*). Palmaceae (IV. 1). 2 New Cal.

Cyphostigma Benth. Zingiberaceae (I). 1 Ceylon.

Cypress *Cupressus*; -**pine** (Austr.), *Callitris*; **Sitka**-, *Chamaecyparis*; **swamp**-, *Taxodium*.

Cypripedium L. Orchidaceae (I. 2). 30 N. temp. and subtemp. (*C. Calceolus* L. in Brit.). Lady's-slipper orchids. Terrestrial acranthous plants. Lat. sepals completely united. Labellum slipper-like with inturned edge; at its base is the column, partly enclosed in it. The large std. (see fam.) is visible outside the labellum; under it are the two anthers, and lower down the flat stigma. Pollen glutinous not united into pollinia. Insects (mostly bees) visiting the fl. get inside the labellum and cannot get out by the way they entered, so have to pass out by the openings at the base, in doing which they brush against the stigma and then the anthers.

Cypselea Turp. Aizoaceae (II). 1 W. Indies.

Cypselocarpus F. Muell. Chenopodiaceae (inc. sed.). 1 W. Austr.

Cypselodontia DC. Compositae (4). 1 S. Afr.

Cyrrilla Garden. Cyrrillaceae. 3 warm Am., marsh plants with evergr. l., and fls. in racemes below them.

Cyrrillaceae (EP., BH.). Dicots. (Archichl. Sapindales; Olacales BH.). 3 gen., 6 sp. Am. Evergr. shrubs with alt., exstip. l. and racemes of ♀, reg. fls. K 5, imbr., persistent; C 5 or (5), imbr.; A 5 + 5 or 5, with intr. anthers; G (5—2) multi-loc. with 1 (rarely 2—4) pend. anat. ov. in each loc.; raphe dorsal, micropyle facing upwards and inwards. Embryo straight, in endosp. *Genera*: Cliftonia, Costaea, Cyrrilla.

Cyrtandra Forst. Gesneriaceae (I). 200 Malaya, China, Polynesia.

Cyrtandraceae = Gesneriaceae.

- Cyrtandromoea** Zoll. Gesneriaceae (I). 10 Malay Archipelago.
- Cyrtandropsis** Lauterb. Gesneriaceae (I). 1 New Guinea.
- Cyrtanthera** Nees = Jacobinia Moric. (Acanth.).
- Cyrtanthus** Ait. Amaryllid. (I). 16 S. and trop. Afr. Cult. orn. fl.
- Cyrtocarpa** H.B. et K. Anacardiaceae (2). 1 Mexico.
- Cyrtoceras** Benn. = Hoya R. Br. p.p. (Asclep.).
- Cyrtochilum** H.B. et K. = Oncidium Sw. p.p. (Orchid.).
- Cyrtodeira** Hanst. = Episcia Mart. p.p. (Gesner.).
- Cyrtogonone** Prain. Euphorbiaceae (A. II. 1). 1 trop. Afr.
- Cyrtomium** Presl (*Polystichum* p.p.). Polypodiaceae. 4 E. As.
- Cyrtosora** Zipp. Inc. sed. 1 New Guinea.
- Cyrtopera** Lindl. = Eulophia R. Br. (Orchid.).
- Cyrtopodium** R. Br. Orchidaceae (II. 10). 5 trop. Am. Cult. orn. fl.
- Cyrtorchis** Schlechter. Orchidaceae (II. 20). 15 trop. Afr.
- Cyrtosia** Blume (*Galeola* B.H.). Orchidaceae (II. 2). 4 S.E. As.
- Cyrtosperma** Griff. Araceae (IV). 11 trop. The rhiz. of *C. edule* Schott is ed. when cooked (cult. in Polynes.).
- Cyrtostachys** Blume. Palmaceae (IV. 1). 3 Malaya. Ornamental.
- Cyrtostylis** R. Br. Orchidaceae (II. 2). 3 Austr., N. Z.
- Cyrtosiphus** Harms (*Cylicodiscus*). Legum. (I. 5). 1 trop. Afr.
- Cystacanthus** T. Anders. Acanthaceae (IV. B). 4 Further India.
- Cystochilum** Barb. Rodr. (*Cranichis* EP.). Orchid. (II. 3). 1 Brazil.
- Cystolith**, a concretion in cells of Urticaceae, &c., showing as a lighter coloured dot when held up to the light.
- Cystopteris** Bernh. Polypodiaceae. 15 temp. and sub trop. 2 Brit., incl. *C. fragilis* Bernh. (bladder-fern). In *C. bulbifera* Bernh. adv. buds on petioles give veg. repr.
- Cystopus** Blume = Odontochilus Blume (Orchid.).
- Cystorchis** Blume. Orchidaceae (II. 2). 2 Malay Archipelago.
- Cystostemma** Fourn. Asclepiadaceae (II. 1). 1 S. Brazil.
- Cystostemon** Balf. f. Boraginaceae (IV. 4). 1 Socotra.
- Cytharea** Salisb. = Calypso Salisb. (Orchid.).
- Cytinaceae** (B.H.) = Rafflesiaceae + Hydnoraceae. Multiovulatae Terrestres.
- Cytinus** L. Rafflesiaceae. 2 Afr., Medit.
- Cytisopsis** Jaub. et Spach. Leguminosae (III. 5). 1 W. As.
- Cytisus** L. (incl. *Sarothamnus* Wimm., excl. *Laburnum* L.). Leguminosae (III. 3). 40 Eur., Medit. *C. (S.) scoparius* Link, the broom, Brit. The l. in this sp. are reduced to scales and assim. is chiefly performed by the stems. The fl. has an explosive mech., in general like *Genista* (q.v.), but different in detail. The style is very long and there are two lengths of sta., so that pollen is shed near the tip of the keel (where also is the stigma) and also about half way along its upper side. When an insect alights on the fl. (there is no honey), the keel begins to split from the base towards the tip, and presently the pollen of the short sta. is shot out upon the lower surface of the visitor; immediately afterwards, the split having reached the tip, the other pollen and the style spring violently out and strike the insect on the back. As the stigma touches first there is thus a chance of a cross, if the insect bear any pollen. Afterwards the style bends right round and the stigma occupies a position just above the short sta.,

so that another chance of cross-fert. is afforded if other insects visit the fl. (in most exploding fls. there is only the one chance). Other sp. have simple mechanisms like *Trifolium*. The fr. explodes by a twisting of the valves.

C. Adami Poit is a curious graft-hybrid between *C. purpureus* Scop. and *Laburnum vulgare*. The latter was used as the stock; the shoots above the graft exhibit hybrid characters (see Darwin, *Variation under Domest.* ch. xi). Recently this matter of *chimeras* (half-and-half shoots, &c.) and graft-hybrids has been much investigated. See review in *Bot. Gazette*, 51, 1911, p. 147.

Daboecia D. Don (*Dabeocia*). Ericaceae (1. 3). 1 Atl. Eur. (incl. Ireland), *D. polifolia* D. Don (St. Dabeoc's heath). Cult. orn. fl.

Dacrydium Soland. Coniferae (Taxaceae; see C. for gen. char.). 12 Malaya, N.Z., Tasm., S. Am. Most are dioecious. Fruit scales 1 or 2 or more. Seed arillate. *D. Franklinii* Hook. f. (Huon pine; Tasm.) and *D. cupressinum* Soland. (red pine; N.Z.) good timber.

Dacryodes Vahl. Burseraceae. 1 W. Indies.

Dactylaena Schrad. Cappariaceae (v). 3 Brazil.

Dactylanthra Welw. nomen. Guttiferae.

Dactylanthus Hook. f. Balanophoraceae. 1 New Zealand.

Dactyliandra Hook. f. Cucurbitaceae (2). 1 trop. W. Afr.

Dactylis L. Gramineae (10). 1 Eur. (incl. Brit.), Medit., As., *D. glomerata* L., cock's-foot, a valuable pasture grass.

Dactylocladus Oliv. Melastomaceae (III). 1 Borneo.

Dactyloctenium Willd. (*Eleusine* p.p. BH.). Gram. (II). 5 warm.

Dactyloid, finger-like.

Dactyloides Nieuwland (*Saxifraga* p.p.). Saxifr. (I). 2 N. Am.

Dactylopetalum Benth. Rhizophoraceae. 8 trop. Afr., Madag.

Dactylophyllum Spach = *Gilia* Ruiz et Pav. p.p. (Polemon.).

Dactylorhynchus Schlechter. Orchidaceae (II. 16). 1 New Guinea.

Dactylostalix Reichb. f. (*Cremastra* BH.). Orchid. (II. 10). 1 Japan.

Dactylostelma Schlechter. Asclepiadaceae (II. 1). 1 Bolivia.

Dactylostemon Klotzsch = *Actinostemon* Klotzsch p.p. (Euph.).

Dadap, *Erythrina*.

Dadia Vell. Compositae (inc. sed.). 1 Brazil.

Daedalacanthus T. Anders. (*Eranthemum* p.p.). Acanth. (IV. A). 14 Indomal.

Daemia R. Br. Asclepiadaceae (II. 1). 4 palaetrop.

Daemonorops Blume ex Schult. f. (*Calamus* p.p. EP.). Palmaceae (III. 2). 60 Indomal.

Daffodil, *Narcissus Pseudo-narcissus* L.

Dagger-plant (W. I.), *Yucca*.

Dahlia Cav. Compositae (5). 10 Mexico. Perenn. herbs with tuberous roots. Many vars. of *D. variabilis* Desf. and other sp. are cult. orn. fl.; the double forms have the disc florets ligulate as well as the ray (cf. *Chrysanthemum*). (Hemsley in *Gard. Chron.* 1879.)

Dahlstedtia Malme (*Camptosema* p.p.). Legum. (III. 10). 1 Brazil.

Daikon, see Radish.

Dais Royen ex L. Thymelaeaceae. 2 Natal, Madag. Cult. orn.

Daisy, *Bellis perennis* L.; **Australian-**, *Vittadinia*; **bush-**, *Olearia*,

Haastia; **dog-**, *Chrysanthemum Leucanthemum* L.; **globe-**, *Globularia*; **Michaelmas-**, *Aster*; **ox-eye**, *Chrysanthemum Leucanthemum* L.; **-tree**, *Montanoa pinnatifida* C. Koch.

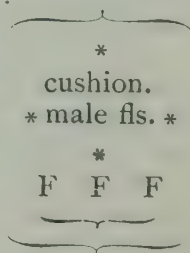
Dal, pigeon-pea, *Cajanus indicus* Spreng.

Dalbergia L. f. Leguminosae (III. 8). 120 trop. Several are lianes.

D. variabilis Vog. is a shrub with pendulous twigs when growing in the open, but in the forest becomes a liane climbing by aid of short lat. shoots which are sensitive to contact. Many yield valuable wood. e.g. *D. nigra* Allem. (rosewood; Braz.) and other Am. spp.; *D. melanoxylon* Guill. et Perr. (Afr. blackwood; W. trop. Afr.); *D. latifolia* Roxb. (blackwood or East Indian rosewood), and *D. Sissoo* Roxb. (shisham, sissoo, India).

Dalea L. Leguminosae (III. 6). 100 Am.

Dalechampia Plum. ex L. Euphorbiaceae (A. II. 2). 60 trop. *D. Roesliana* Müll.-Arg. cult. orn. infl.; it has a very complex infl. (cf. the diagram). The whole is enclosed in two large outer bracts (the big brackets), coloured pink or white. Above these on the axis is a smaller bract (the little bracket), in whose axil is a 3-fl. cyme of ♀ fls. (F). Above this is the ♂ part of the infl., starting with 4 bracts (repres. by the asterisks). Above these, anteriorly, are 9—14 ♂ fls. and posteriorly a curious yellow cushion, consisting of rudimentary ♂ fls. In a Braz. sp. the cushion secretes resin, which is used by bees for nest making, and attracts them to the flr.



Dalembertia Baill. Euphorbiaceae (A. II. 7). 4 Mexico.

Dalenia Korth. Melastomaceae (I). 1 Borneo.

Dalhousiea R. Grah. Leguminosae (III. 1). 1 palaeotrop.

Dalibarda L. = *Rubus Tourn.* p.p. (Ros.).

Dallachya F. Muell. Rhamnaceae. 1 E. Austr., Polynes.

Dalmatian insect powder, *Chrysanthemum cinerariaefolium* Vis.

Damask rose, *Rosa damascena* Mill.

Damasonium Mill. Alismaceae. 3 Eur., Medit., Austr., Tasm., Calif.

Dame's violet, rocket, *Hesperis matronalis* L.

Dammar, a hard resin, *Agathis*, *Dipterocarpaceae*, *Shorea*; **black-**, *Canarium*; **white-**, *Vateria*.

Dammara (Rumph.) Lam. = *Agathis* Salisb. (Conif.).

Dammaropsis Warb. Moraceae (II). 1 New Guinea.

Dammera Lauterb. et K. Schum. Palmaceae (I. 2). 2 New Guinea.

Damnacanthus Gaertn. f. Rubiaceae (II. 9). 2 E. As.

Dampiera R. Br. Goodeniaceae. 35 Austr.

Damson, *Prunus insititia* L., var.; **bitter-** (W.I.), *Simaruba amara* Aubl.; **-plum** (W.I.), *Chrysophyllum*.

Danaa All. Physospermum Cunn. (Umbell.).

Danae Medic. Liliaceae (VII). 1 W. As.

Danaea Sm. Marattiaceae (III). 30 Am. The stem branches, a rare character in M. The synangia are very long, sometimes reaching from midrib to margin of the l., and open by a terminal pore.

Danais Comm. Rubiaceae (I. 5). 20 Madag., Masc.

- Dancing girls**, *Mantisia saltatoria* Sims.
Dandelion, *Taraxacum officinale* Weber.
Dangleberry (Am.), *Gaylussacia*.
Danielia Mello. Bignoniaceae (I). 1 Brazil.
Daniella J. J. Benn. Leguminosae (II. 3). 3 trop. W. Afr.
Danthonia DC. Gramineae (9). 150 trop. and temp., esp. S. Afr.
Dapania Korth. Oxalidaceae. 2 Malaya.
Daphnales (BH.). The 5th series of Monochlamydeae.
Daphnandra Benth. Monimiaceae. 4 Austr.
Daphne Tourn. ex L. Thymelaeaceae. 40 Eur., temp. and subtemp.
 As.; *D. Mezereum* L. (mezereon) and *D. Laureola* L. (spurge-laurel) Brit. Honey is secreted by the base of the ovary, and the depth of the tube preserves it for long-tongued insects; the fl. belongs to class F. Several cult. orn. fl. Bark used for paper in India.
Daphnidium Nees = *Lindera* Thunb. p.p. (Laur.).
Daphniphyllum Blume. Euphorbiaceae (A. I. 3). 1 trop. Afr., Indomal., China, &c.
Daphnopsis Mart. et Zucc. Thymelaeaceae. 25 S. Am., Mex., W. I.
Darlingia F. Muell. Proteaceae (II). 1 Queensland.
Darlingtonia Torr. Sarracenaceae. 1 Calif., a pitcher pl. like *Sarracenia*, but top of tube bent over and a fish-tail-shaped flap in front.
Darnel grass, *Lolium temulentum* L.
Dartus Lour. Solanaceae (inc. sed.). 1 E. As.
Darwinia Rudge. Myrtaceae (II. 2). 25 Austr. Heath-like shrubs.
Dasheen, tuberous-rooted taro, *Colocasia antiquorum* Schott.
Dasiogyna Rafin. Inc. sed. 1 N. Am.
Dasistoma Rafin. = *Gerardia* L. (Scroph.).
Dasus Lour. Inc. sed. 1 Cochinchina.
Dasycephala Benth. et Hook. f. (*Diodia* L. EP.). Rubiaceae (II. 10). 5 trop. Am.
Dasycoleum Turcz. (*Chisocheton* EP.). Meliac. (III). 4 Mal. Arch.
Dasylepiss Oliv. Flacourtiaceae (I). 2 W. Afr.
Dasylyrion Zucc. Liliaceae (VI). 10 Texas, Mex. Aloe-like, xero.; stems woody, often tuberous; hard l. Fls. dioec., in gigantic infl. Cf. *Cordyline*.
Dasylooma DC. = *Oenanthe* Tourn. p.p. (Umbell.).
Dasymaschalon Hook. f. et Thoms. Anon. (4). 3 trop. As.
Dasynema Schott = *Sloanea* L. (Elaeocarp.).
Dasypoa Pilger (*Poa* p.p. EP.). Gramineae (10). 1 Peru.
Dasypogon R. Br. Liliaceae (III.) (Junc. BH.). 2 S.W. Austr.
Dasyspermum Neck. Inc. sed. Farrago Umbelliferarum.
Dasysphaera Volkens. Amarantaceae (2). 2 E. Afr.
Dasystachys Baker (*Chlorophytum* p.p. EP.). Lili. (III). 15 trop. Afr.
Dasystephana Adans. = *Gentiana* Tourn. p.p. (Gent.).
Date, *Phoenix dactylifera* L.; -plum, *Diospyros Lotus* L., &c.
Datisca L. Datisceae. 2 N. Am., W. As.
Datisceae (EP., BH.). Dicots. (Archichl. Parietales; Passiflorales BH.). 3 gen. 4 sp., trop. and temp. Trees or herbs with exstip. l. and racemes or spikes of reg., usu. dioec., sometimes ap. fls. ♂ fl.: K 3—9, free or united; C 4—9 or 0; A 4—9 or ∞; ♀: K 3—8,

united to one another and to the ovary; C 0; $\bar{G}$ (3—8), with free styles; 1-loc. with parietal plac. and ∞ anat. ov. Caps. No endosp. *Genera*: Datisca, Tetrameles, Octomeles. Affinities doubtful (see *Nat. Pfl.*); probably allied to Begoniaceae.

Datura L. Solanaceae (3). 15 trop. and warm temp. *D. Stramonium* L. (thorn-apple; escape in Brit.) has a 4-loc. ov. (see fam.) giving a 4-valved caps. covered with spines. The l. and seeds are medic. Some cult. orn. fl.

Daubenya Lindl. Liliaceae (v). 3 S. Afr.

Daucophyllum Rydberg. Umbelliferae (III. 5). 2 Rockies.

Daucus (Tourn.) L. Umbelliferae (III. 8). 60 Eur., As., Afr., Am. *D. Carota* L. (carrot) Brit., biennial with thickened root. The cult. form has much more fleshy roots than the wild. In the centre of the umbel is usu. a red term. fl. After fert. the peduncles all bend inwards until the frs. are ripe and then spread out again allowing the burred mericarps to adhere to animals.

Dayallia Sm. Polypodiaceae. 80 mostly trop. Sori marginal.

Daveaua Willk. Compositae (7). 1 Portugal.

Davidia Baill. Cornaceae. 1 Tibet, China.

Davidsonia F. Muell. Cunoniaceae. 1 N.E. Austr. L. alt.

David's root (W. I.), *Chiococca*.

Dayesia Sm. Leguminosae (III. 2). 55 Austr.

Davilla Vand. Dilleniaceae. 25 trop. Am. The two inner sepals are larger; after fert. they grow woody or leathery and enclose the fr.

Davya DC. = *Meriania* Sw. p.p. (Melast.).

Day-flower (Am.), *Commelina*; -lily (Am.), *Hemerocallis*.

Deadly dwale (W. I.), *Acnistus*; -nightshade, *Atropa Belladonna* L.

Dead-finish (Austr.), *Acacia tetragonophylla* F. Muell.; -nettle, *Lamium*.

Deal, *Pinus sylvestris* L., &c.

Dealbate, whitened.

Deanea Coulter et Rose. Umbelliferae (III. 6). 8 Mexico.

Debesia O. Ktze. (*Acrospira*). Liliaceae (III). 1 trop. Afr.

Debregeasia Gaud. Urticaceae (3). 5 Abyss., S. and E. As. *D. edulis* Wedd. (janatsi; Japan) ed. fr., useful fibre (cf. *Boehmeria*).

Deca- (Gr. pref.), **decem** (Lat.), ten; -**androus**, with 10 sta.

Decabelone Decne. Asclepiadaceae (II. 3). 3 S. Afr.

Decaceras Haw. (*Anisotoma* BH.). Asclepiadaceae (II. 3). 2 S. Afr.

Decachaeta DC. Compositae (2). 1 Mexico.

Decadia Lour. Inc. sed. 1 Cochin-China.

Decagonocarpus Engl. Rutaceae (I). 1 Amazon valley.

Decaisnea Hook. f. et Thoms. Lardizabalaceae. 1 Himal., China, *D. insignis* H. f. et T., with ed. fr. (Hooker's *Himal. Journ.*, xxv.).

Decalepis Boeck. (*Boeckleria* Durand). Cyper. (II). 1 S. Afr.

Decalepis Wight et Arn. Asclepiadaceae (I). 1 Dekkan.

Decaloba M. Roem. = *Passiflora* L. p.p. (Passifl.).

Decanema Decne. Asclepiadaceae (II. 1). 2 Madagascar.

Decanemopsis Costantin et Galland. Asclep. (II. 1). 1 Madag.

Decaneurum DC. = *Centratherum* Cass. (Compos.).

Decaptera Turcz. Cruciferae (I). Chili.

Decaschistia Wight et Arn. Malvaceae (4). 5 trop. As.

Decaspermum Forst. Myrtaceae (I). 12 Indomal.

- Decaspora** R. Br. = *Trochocarpa* R. Br. (Epacrid.).
- Decastelma** Schlechter. Asclepiadaceae (II. 1). 1 W. Indies.
- Decatoca** F. Muell. Epacridaceae (3). 1 New Guinea.
- Decatropis** Hook. f. Rutaceae (1). 1 S. Mexico.
- Decazesia** F. Muell. Compositae (4). 1 W. Austr.
- Deciduous** (l.), falling in autumn, or at the beginning of the dry season; (perianth), falling after fertilisation.
- Decipiens** (Lat.), deceiving.
- Deckenia** H. Wendl. (*Acanthophoenix* BH.). Palmae. (IV. 1). 1 Seychelles.
- Deckera** Sch.-Bip. = *Picris* L. p.p. (Comp.).
- Declieuxia** H. B. et K. Rubiaceae (II. 5). 33 trop. S. Am., W. I.
- Declinate**, bent downwards or forwards.
- Decodon** J. F. Gmel. (*Nesaea* BH.). Lythraceae. 1 N. Am.
- Decomound**, several times divided.
- Decumaria** L. Saxifragaceae (III). 2 China, S.E. U.S.
- Decumbent** (stem), bending upwards from prostrate base.
- Decurrent** (l.), continued by wing on stem, as in thistles.
- Decussate** (l.), each pair of opp. l. $\perp$ to the next pair.
- Dedea** Baill. Saxifragaceae (V). 2 New Caledonia.
- Dedoublement**, branching, *Polygonaceae*.
- Deer-berry** (Am.), *Vaccinium stamineum* L.; -**grass** (Am.), *Rhexia*.
- Deeringia** R. Br. Amarantaceae (I). 6 palaeotrop.
- Definite growth** (stem), when the buds grow rapidly to their full elongation, and stop, *Aesculus*, *Pinus*, &c.; (infl.), when the branches each in turn term. in a fl. (cymes, *q.v.*).
- Deflersia** Schweinf. ex Penzig. Euphorb. (inc. sed.). 1 Erythrea.
- Deflexed**, bent sharply outwards.
- Defoliation**, leaf-casting.
- Degenerate** fl., one which has gone back to an earlier type.
- Degenia** Hayek. (*Lesquerella* p.p.). Crucif. (4). 1 Croatia.
- Deguelia** Aubl. (*Deris* Lour. BH.). Legum. (III. 8). 40 trop.
- Dehaasia** Blume. Lauraceae (II). 10 Malay Archipelago.
- Deherainia** Decne. Theophrastaceae. 2 Mex., W. I., incl. *D. smaragdina* Decne. with large green fls. (coloured by chlorophyll).
- Dehiscence**, mode of opening; cf. Fruit, Stamen.
- Deianira** Cham. et Schlecht. Gentianaceae (I). 5 Brazil.
- Deidamia** Nor. ex Thou. Passifloraceae. 6 Madagascar.
- Deinacanthon** Mez (*Rhodostachys* Phil.). Bromel. (4). 1 Argentina.
- Deinandra** Greene = *Hemizonia* DC. (Comp.).
- Deinantho** Maxim. Saxifragaceae (III). 1 Japan.
- Deinbollia** Schum. et Thonn. Sapindaceae (I). 15 warm Afr., Madag.
- Dekindtia** Gilg. Oleaceae. 1 trop. Afr.
- Dekinia** Mart. et Gal. (*Lepechinia* p.p. E.P.). Labiat. (VI). 1 Mex.
- Delamerea** Sp. Moore. Compositae (4). 1 Brit. E. Afr.
- Delaporteia** Thorel et Gagnep. Leguminosae (I. 1). 1 Laos.
- Delarbrea** Vieill. Araliaceae (2). 3 New Caled., New Guinea.
- Delavaya** Franch. Sapindaceae (II). 1 Yunnan.
- Delima** L. = *Tetracera* L. p.p. (Dillen.).
- Deliquescent** (stem), breaking up into branches.

- Delissea** Gaudich. Campanulaceae (III). 7 Sandwich Islands.
- Delognaea** Cogn. Cucurbitaceae (3). 1 Madagascar.
- Delopyrum** Small (*Polygonella* p.p.). Polygon. (II. 2). 2 U. S.
- Delostoma** D. Don. Bignoniaceae (2). 5 trop. Andes.
- Delpechia** Montr. Inc. sed. 2 New Caled.
- Delphinium** Tourn. ex L. Ranunculaceae (2). 150 N. temp. *D. Ajacis* L. (larkspur) Brit. Several cult. orn. fl. Fls. ♂ in racemes; the post. sepal is drawn out into a spur containing the spurs of the two post. petals, in which the honey is secreted. (Cf. with *Aconitum*, which is far more frequently robbed by humble-bees.) The fl. is protandr. with movement of sta., fert. by humble-bees. The open fl. projects horiz., but subsequently the stalk bends up and the follicles stand erect so that the seeds can only escape if shaken, e.g. by strong wind (censer-mechanism).
- Delphyodon** K. Schum. Apocynaceae (II. 1). 1 New Guinea.
- Delpinoa** H. Ross (*Agave* p.p. *EP.*). Amaryll. (II). 1 N. Am.
- Delpinoella** Spegazz. Cruciferae (inc. sed.). 1 Patagonia.
- Delpinophytum** Spegazz. Cruciferae (2). 1 Patagonia.
- Deipya** Pierre ex Bonati (*Vandellia* p.p.). Scrophulariaceae (II. 6). 1 Cochinchina.
- Delpydora** Pierre. Sapotaceae (I). 1 trop. Afr.
- Deltoid**, the shape of an equilateral triangle.
- Dematophyllum** Griseb. Zygophyllaceae (?). 1 Argentina.
- Demazeria** Dum. Gramineae (10). 4 Medit., S. Afr. *D. (Brizopyrum) sicala* Dum. is a cult. ornam. grass.
- Demersus** (Lat.), sub-aqueous.
- Demeusia** De Wild. et Durand. Amaryllidaceae (1). 1 Congo.
- Demidium** DC. (*Amphidoxa* *EP.*). Compositae (4). 1 Madagascar.
- Democrita** Vell. Inc. sed. 1 Brazil.
- Dendrobangia** Rusby. Icacinaceae. 1 Bolivia.
- Dendrobium** Sw. Orchidaceae (II. 15). 600 trop. As., Japan, Austr., Polynes. Epiphytes; cult. orn. fl. For floral mechanism see Darwin's *Orchids*, p. 138.
- Dendrocalamus** Nees. Gramineae (13). 12 Indomal., China. *D. giganteus* Munro (the giant bamboo), the largest known bamboo (cf. bamboos), grows with great rapidity (see Lock in *Ann. Perad.*, II. 1904, p. 211), even as much as 46 cm. a day. *D. strictus* Nees (male bamboo) has solid stems, used for lances, &c.
- Dendrochilum** Blume. Orchidaceae (II. 16). 3 Indomal.
- Dendrocolla** Blume = *Sarcochilus* R. Br. p.p. (Orchid.).
- Dendroconche** Copeland (*Polypodium* p.p.). Polypod. 1 Phil. Is.
- Dendrocousinia** Millspaugh. Euphorbiaceae (A. II. 7). 2 N. Am.
- Dendroid**, tree-like.
- Dendromecon** Benth. Papaveraceae (II). 10 California.
- Dendron** (Gr.), a tree.
- Dendropanax** Decne. et Planch. (*Gilibertia* Ruiz et Pav. *EP.*). Araliaceae (1). 25 trop. and subtrop.
- Dendrophthoe** Mart. = *Loranthus* L. p.p. (Loranth.).
- Dendrophthora** Eichl. Loranthaceae (II). 20 W.I., trop. Am.
- Dendrophylax** Reichb. f. Orchidaceae (II. 20). 3 W. Indies.
- Dendropogon** Rafin. = *Tillandsia* L. (Bromel.).

- Dendroseris** D. Don. Compositae (13). 7 Juan Fernandez.
Dendrosicyos Balf. f. Cucurbitaceae (2). 2 Socotra, trop. Afr.
Dendrosma Panch. et Sebert. Rutaceae (inc. sed.). 1 New Caled.
Dendrostylis Karst. et Triana (*Mayna EP.*). Flac. (2). 8 S. Am.
Denekia Thunb. Compositae (4). 2 trop. Afr.
Denhamia Meissn. Celastraceae. 4 trop. Austr.
Denisia Post et O. Ktze. (*Phryma* p.p.). Phrymaceae. 1 S. Afr.
Denisonia F. Muell. Verbenaceae (3). 1 Australia.
Denizen, a pl. probably foreign, but maintaining its place.
Dennettia E. G. Baker. Anonaceae (1). 1 S. Nigeria.
Dennstaedtia Bernh. Polypodiaceae. 60 trop., S. Am., Austr.
Dens (Lat.), a tooth.
Dentaria (Tourn.) L. (*Cardamine* p.p. *BH.*). Crucif. (2). 20 N. temp.
Dentate (dim. **denticulate**), with small teeth pointing outwards.
Dentella Forst. Rubiaceae (1. 2). 1 Indomal.
Deodar, *Cedrus Deodara* Loud.
Deonia Pierre ex Pax. (*Blachia EP.*). Euphorb. (A. II. 5). 1 Cochinchina.
Depauperate, diminutive.
Dependent, hanging down.
Deplanchea Vieill. (*Diplanthera BH.*). Bignon. (2). 6 Malaya, Austr.
Deppea Cham. et Schlecht. Rubiaceae (1. 3). 9 C. Am., Mex.
Depresmenilia F. Muell. (*Pityrodia* p.p. *EP.*). Verben. (3). 1 Austr.
Dermatobotrys Bolus. Scrophul. (inc. sed.). 1 Zululand.
Dermatocalyx Oerst. Scrophulariaceae (II. 4). 1 Costa Rica.
Deroemeria Reichb. f. (*Habenaria* p.p. *BH.*). Orchidaceae (II. 1). 4 trop. Afr., Abyssinia.
Derris Lour. (*Deguelia* Aubl.). Leguminosae (III. 8). 50 trop.
Desbordesia Pierre ex Van Tiegh. (*Irvingia* p.p.). Simarubaceae. 5 trop. Afr.
Descending (aestivation), see Aestivation.
Deschampsia Beauv. Gramineae (9). 20 temp. and frigid. *D. caespitosa* Beauv. (*Aira*) and *D. flexuosa* Trin. in Brit. (hair grass); of tufted growth; rough fodder grasses.
Description of plants. Root, stem, leaf, flower, and fruit, &c. are described for floras, &c. in concise technical terms (original descriptions of new species must be in Latin), which are mostly given here under fl., l., &c. The descriptions of families in this book may serve as examples for large groups, and as examples of a species described in full detail we may refer to any numbers of the *Journ. Linn. Soc.* or to Lindley's *Descriptive Botany*, from which we quote as instances:
lilac (l.): l. opp., exstip., roundish-cordate, very acute, thin, smooth, rather longer than the linear channelled petiole.
buttercup (fl.): fl. term., sol., on long angular and furrowed peduncles, reg., ♀, hypog. Sepals 5, polysep., oval, coloured at edge, reflexed, with shaggy hairs. Petals 5, polypet., roundish, concave, with wedge-shaped basal nectaries, bright yellow. Stamens ∞, polyandrous, spiral; filament yellow, slender; anther linear, adnate, extrorse. Carpels ∞, apocarpous, superior, collected into a nearly spherical head, greenish; stigmas sessile, recurved; ovules solitary, ascending, anatropous.

But if all the species in a genus are known, it is obvious that for purposes of description to enable identification, such a description is much too long, and the skill of the describer will be shown in describing those characters only in full (or as fully as necessary) which are essential to the discrimination of the species among its congeners.

- Descurainia** Webb et Berth. (*Sisymbrium* p.p. *BH.*) Cruciferae (4). 18 N. temp., S. Am.
- Desdemona** Sp. Moore. Scrophulariaceae (inc. sed.). 1 Brazil.
- Desfontainia** Ruiz et Pav. Loganiaceae. 2 Andes. Ovary 5-loc.
- Desmanthodium** Benth. Compositae (5). 4 Mexico, C. Am.
- Desmanthus** Willd. Leguminosae (1. 3). 15 Am., Madagascar.
- Desmiograstis** Börner. Cyperaceae (III). 1 N. temp.
- Desmochaeta** DC. = *Pupalia* Juss. (Amarant.).
- Desmodium** Desv. Leguminosae (III. 7). 170 trop. and subtrop. In *D. gyrans* DC. (telegraph plant), during the day, if the temperature be not below 72° F. the two small lat. leaflets of each l. move steadily round in elliptical orbits. See Darwin's *Movements of Plants*. At night the leaves sleep, drooping downwards. Several are useful as fodder, and are cult.
- Desmogyne** King et Prain. Ericaceae (III. 1). 1 India.
- Desmoncus** Mart. Palmae (IV. 2). 25 trop. Am., climbing palms with reedy stems, and hooks like *Calamus*.
- Desmonema** Miers. Menispermaceae. 6 warm Afr.
- Desmoscelis** Naud. Melastomaceae (1). 2 trop. S. Am.
- Desmostachya** Stapf. Gramineae (10). 1 trop. As. and Afr.
- Desmostachys** Planch. Icacinaceae. 3 Madagascar, trop. Afr.
- Desmothamnus** Small (*Andromeda* p.p.). Eric. (II. 1). 1 Florida.
- Desmotrichum** Blume (*Dendrobium* p.p.). Orch. (II. 15). 27 Malaya.
- Despeleza** Nieuwland (*Lepedeza* p.p.). Legum. (III. 7). 4 U.S.
- Desplatzia** Bocq. Tiliaceae. 1 W. trop. Afr.
- Desvauxia** R. Br. = *Centrolepis* Labill. (Centrolep.).
- Detandra** Miers (*Sychnosepalum* Eichl.). Menisp. 4 trop. S. Am.
- Detarium** Juss. Legamin. (II. 2). 4 trop. Afr. Pith of pod ed.
- Determinate**, definite, ending with a bud.
- Dethawia** Endl. (*Seseli* p.p. *BH.*). Umbellif. (III. 5). 1 Pyrenees.
- Detris** Adans. = *Felicia* Cass. (Comp.).
- Deuterocohnia** Mez. (*Dyckia*). Bromeliaceae (2). 3 S. Am.
- Deutzia** Thunb. Saxifragaceae (III). 20 N. temp. and trop. Ovary inf. 3—4-loc. The fruit splits septicidally into its cpls. which open each at its apex. The seed is provided with a winged testa, very light.
- Deverra** DC. = *Pituranthos* Viv. (Umbell.).
- Devil-in-a-bush**, *Nigella*; -'s bean (W.I.), *Capparis jamaicensis* Jacq.; -'s bit scabious, *Scabiosa Succisa* L.; -'s cotton, *Abroma augusta* L. f.
- Dewillea** Tul. et Wedd. Podostemaceae. 1 Brazil.
- Dewberry**, *Rubus caesius* L. •
- Dewevrea** M. Micheli. Leguminosae (III. 6). 1 trop. Afr.
- Dewevrella** De Wild. Apocynaceae (II. 1). 1 trop. Afr.
- Deweya** Torr. et A. Gray (*Arracacia* *BH.*). Umbell. (III. 4). 4 W. N. Am.

- Dewildemanina** O. Hoffm. Compositae (1). 1 Congo.
- Dewindtia** De Wild. Leguminosae (II. 3). 1 trop. Afr.
- Dextrorse**, to the right.
- Deyeuxia** Clar. (*Calamagrostis* p.p. *EP.*). Gramineae (8). 120 temp.
- Dhak tree**, *Butea frondosa* Roxb.
- Dhal**, pigeon pea, *Cajanus indicus* Spreng.
- Di-** (Gr. pref.), two; **-adelphous**, in two groups; **-androus**, with two sta.; **-carpellary**, with two cpls.; **-chlamydeous**, with distinct K and C; **-chogamy**, see article below; **-chotomy**, actual forking of growing apex; **-clinism** (**-clinous**), with separate ♂ and ♀ fl.; **-cotyledons**, one of the great divisions of angiosperms; **-cyclic**, in two whorls; **-dymous**, twinned; **-dynamous**, with two sta. longer than rest, *Labiatae*; **-merous**, with two members in each whorl; **-midiate**, halved; **-morphism**, see article below; **-oecism**, see article below; **-photic**, with two surfaces unequally lighted; **-plecolobous**, *Cruciferae*; **-plochlamydeous**, see dichlamydeous; **-plostemonous**, sta. in two whorls, outer alt. with C; **-ptera**, flies, &c.; **-stichous**, in two ranks; **-thecous**, with two thecae; **-variccate**, very divergent; **-vergens** (Lat.), separating.
- Dia-** (Gr. pref.), transverse; **-heliotropism**, transv. h., e.g. in runners, &c.; **-phragm**, a dividing membrane; **-tropism**, a placing of organs transv. to a stimulus.
- Diacalpe** Blume. Polypodiaceae. 1 trop. As.
- Diacarpa** Sim. Sapindaceae. 1 E. Afr.
- Diacattleya** ×, **Dialaelia** × Hort. Orchidaceae. Hybrids of *Diacrium* with *Cattleya* and *Laelia*.
- Diacidia** Griseb. Malpighiaceae (II). 1 trop. S. Am.
- Diacrium** Benth. Orchidaceae (II. 6). 4 Mexico to Guiana.
- Diadenium** Poepp. et Endl. Orchidaceae (II. 19). 1 Peru.
- Diagram**, floral, see Floral Diagram.
- Dialiopsis** Radlk. Sapindaceae (II). 1 trop. Afr.
- Dialium** L. Leguminosae (II. 5). 15 trop. Petals 2, 1, or 0; sta. 2, or rarely 3. *D. guineense* Willd. (trop. Afr.; velvet tamarind) pod contains an ed. pulp; wood useful, resists salt water. *D. indum* L. (Java; tamarind plum) and others have also ed. fr.
- Dialyanthera** Warb. Myristicaceae. 2 Peru, Colombia.
- Dialycarpa** Mast. Bombacaceae. 1 Borneo.
- Dialyopsis** Radlk. Sapindaceae (II). 1 trop. Afr.
- Dialypetalae**, Polypetalae.
- Dialypetalum** Benth. Campanulaceae (III). 2 Madagascar.
- Diamorpha** Nutt. Crassulaceae. 2 E. U.S.
- Diandriella** Engl. Araceae (V). 1 New Guinea.
- Diandrolyra** Stapf. Gramineae (5). 1, habitat unknown.
- Dianella** Lam. Liliaceae (III). 11 trop. As., Austr., Polynes., Masc.
- Dianthera** Gronov. (*Justicia* p.p. *EP.*). Acanthaceae (IV. B). 80 trop.
- Dianthoseris** Sch. Bip. Compositae (13). 2 Abyssinia.
- Dianthus** L. Caryophyllaceae (II. 2). 250 Eur., As., Afr., esp. Medit., mostly in dry sunny situations (4 in Brit.; pinks). Genus readily known by the bracts under the K. Fls. very protandrous (class F), largely visited by butterflies. Many cult. orn. fl., e.g. *D. barbatus* L.

(Sweet William), *D. Caryophyllus* L. (carnation, picotee, clove-pink), *D. chinensis* (China or Indian pink), &c.

Diapedium Koen. = *Dicliptera* Juss. (Acanth.).

Diapensia L. *Diapensiaceae*. 2, one Himal., *D. lapponica* L. circum-polar boreal. Tufted, like ∞ alpine and arctic pl.; fl. protog.

Diapensiaceae (EP., BH.). *Dicots.* (Sympet. *Ericales* EP., BH.). 6 gen., 9 sp., $\times$, chiefly alpine and arctic evergr. under-shrubs, with rosettes of l.; fls. sol. or in racemes, with two bracteoles, $\frac{8}{8}$, actinom., without a disc. K (5) or 5, C (5) nearly polypet., A 5, epipet., opp. sepals, with frequently 5 sids. opp. petals; anthers transv., each lobe opening by longitudinal slit; pollen simple; G (3) with axile plac. bearing ∞ anatr. or amphitr. ov.; style simple with 3-lobed capitate stigma. Fruit a loculic. caps. Embryo cylindrical, endosp. fleshy.

Chief genera: *Diapensia*, *Shortia*, *Galax*.

Diaperia Nutt. (*Evax* p.p.). *Compositae* (4). 4 N. Am.

Diaphananthe Schlechter. *Orchid.* (II. 20). 20 trop. Afr.

Diaphycarpus Calest. (*Carum* p.p.). *Umbell.* (III. 5). 1 *Medit.*

Diarrhena Beauv. *Gramineae* (10). 3 N. Am., E. As.

Diarthron Turcz. *Thymelaeaceae*. 2 C. As.

Diascia Link et Otto. *Scrophulariaceae* (II. 1). 30 S. Afr.

Diaspasis R. Br. *Goodeniaceae*. 1 S.W. Austr.

Diasperus L. = *Phyllanthus* L. (Euph.).

Diaspis Niedenzu. *Malpighiaceae* (1). 1 Brit. E. Afr.

Diastatea Scheidw. *Campanulaceae* (inc. sed.). 1 Mexico.

Diastema Benth. *Gesneriaceae* (II). 18 trop. Am. Cult. orn. fl.

Diateinacanthus Lindau. *Acanthaceae* (IV. B). 1 Centr. Am.

Diatenopteryx Radlk. *Sapindaceae* (I). 1 S. Am.

Diberara Baill. (*Nebelia* BH.). *Bruniaceae*. 5 S. Afr.

Dicaelospermum C. B. Clarke. *Cucurbitaceae* (2). 1 Indomal.

Dicarpidium F. Muell. *Bombacaceae*. 1 Austr.

Dicaryum Willd. (*Geissanthus* EP.). *Myrsinaceae* (II). 2 S. Am.

Dicella Griseb. *Malpighiaceae* (II). 3 Brazil, Paraguay.

Dicellandra Hook. f. *Melastomaceae* (1). 2 trop. W. Afr.

Dicellostyles Benth. *Malvaceae* (4). 2 Ceylon, Sikkim.

Dicentra Bernh. *Papaveraceae* (III). 15 As., N. Am. *D. Cucullaria* Bernh. (Dutchman's breeches) and others cult. orn. fl. The rhiz. of many sp. (§ *Cucullaria*) resembles a succession of bulbs, on account of the fleshiness of the scale l. and of the sheathing bases of the fol. l. The materials formed in the l. during the growing season are stored up in the fleshy base, which survives the winter, while the rest of the l. dies. Fls. in racemes, pend. Each outer petal has a large pouch at its base. The inner petals are spoon-shaped and cohere at the tip, forming a hood which covers the anthers and stigma. The pend. position and complex structure of the fl. render it suited to bees, which hang on to it and probe for honey first one side, then the other, in the pouches of the petals. In so doing they push aside the hood and touch the stigma, on which there is usu. pollen from its own sta.

Dicerandra Benth. = *Ceranthera* Ell. (Labiatae).

Diceratella Boiss. *Cruciferae* (4). 3 W. As., trop. Afr.

Dicerostylis Blume (*Hylophila* EP.). *Orchidaceae* (II. 2). 1 Malaya.

- Dichaea** Lindl. Orchidaceae (II. 20). 10 trop. Am., W. I. Monopodial creeping epiphytes with sheathing l. Cult. orn. fl.
- Dichaelia** Harv. (*Brachystelma* BH.). Asclep. (II. 3). 10 S. Afr.
- Dichaeopsis** Pfitz. (*Dichaea* Lindl. p.p.). Orchidaceae (II. 20). 5 trop. Am.
- Dichaetanthera** Endl. Melastomaceae (I). 16 Madagascar, Masc.
- Dichaetaria** Nees (*Gymnopogon* Beauv.). Gramin. (II). 1 Indomal.
- Dichaetophora** A. Gray (*Boltonia* p.p. BH.). Comp. (3). 1 Texas.
- Dichapetalaceae** (EP.; *Chailletiaceae* BH.). Dicots. (Archichl. Geraniales EP., BH.). 3 gen., 100 sp. trop. Woody pl. with entire stip. l. Fls. in cymose umbels, &c., sometimes epiphyllous, usu. reg., ♀ or unisex., typically 5-merous. K and C free or united, the petals often bifid; axis continued into a cup-like disc or scales; A 5, sometimes epipet.; $\bar{G}$ (2—3), each with 2 ov. Drupe with 1- or 2-loc. stone; no endosp.; sometimes a caruncle. *Chief genus* Dichapetalum.
- Dichapetalum** Thou. (*Chailletia* DC.). Dichapet. 120 trop. Several have epiphyllous infl. (cf. *Erythrochiton*), probably arising by a development like infl. of Solanaceae, or thorns of Cactaceae.
- Dichasial cyme**, one in which each successive branch bears two branches upon itself, *Acanthaceae*, *Asclepiadaceae*, *Begonia*, *Bignoniaceae*, *Caryophyllaceae*, *Castanea*, *Convolvulaceae*, *Cornaceae*, *Labiatae*, *Linaceae*, *Sanicula*, *Saxifragaceae*, *Ulmus*, *Urtica*, *Verbenaceae*.
- Dichazotheca** Lindau. Acanthaceae (IV. B). 1 Rio de Janeiro.
- Dichelachne** Endl. Gramineae (8). 3 Austr., N. Zealand.
- Dichelostemma** Kunth. (*Brodiea* Sm.). Lili. (IV). 8 N. Am.
- Dicheranthus** Webb. Caryophyllaceae (I. 6). 1 Canaries.
- Dichilanthe** Thw. Rubiaceae (II. 2). 2 trop. As.
- Dichiloboea** Stapf. Gesneriaceae (I). 2 E. trop. As.
- Dichilus** DC. Leguminosae (III. 3). 4 S. Afr.
- Dichoespermum** Wight = *Aneilema* R. Br. p.p. (Commelin.).
- Dichogamy**, ripening of sexes at different times; sta. ripe before stigma, *protandry*, *Aeschynanthus*, *Aconitum*, *Aquilegia*, *Bignonia*, *Borago*, *Campanula*, *Campanulaceae*, *Caryophyllaceae*, *Clerodendron*, *Compositae*, *Crassulaceae*, *Crocus*, *Delphinium*, *Dipsacaceae*, *Echium*, *Empetrum*, *Epilobium*, *Geraniaceae*, *Gesneriaceae*, *Gladiolus*, *Labiatae*, *Malva*, *Monarda*, *Oxalis*, *Phacelia*, *Phyteuma*, *Rosaceae*, *Saxifraga*, *Scabiosa*, *Stellaria*, *Teucrium*, *Thymus*, *Umbelliferae*, *Valeriana*; stigma ripe before sta., *protogyny*, *Alopecurus*, *Amorpha*, *Anthurium*, *Aesculus*, *Araceae*, *Callitriche*, *Carex*, *Chimonanthus*, *Colchicum*, *Coriaria*, *Epimedium*, *Euphrasia*, *Ficus*, *Fragaria*, *Helleborus*, *Humulus*, *Juncus*, *Magnolia*, *Mirabilis*, *Parietaria*, *Paris*, *Plantago*, *Potamogeton*, *Pyrus*, *Scrophularia*, *Thalictrum*.
- Dichoglottis** Fisch. et Mey. = *Gypsophila* L. p.p. (Caryophyll.).
- Dichondra** Forst. Convolvulaceae (I). 5 trop., some amphicarpic.
- Dichondropsis** T. S. Brandege. Convolvulaceae (I). 1 Mexico.
- Dichopogon** Kunth. Liliaceae (III). 2 Austr. Cult. orn.
- Dichopsis** Thw. (*Palaquium* Blanco q.v.). Sapotaceae (I). 50 Indomal.
- Dichorisandra** Mikan. Commelinaceae. 30 trop. Am. Infl. racemose (cf. fam.); its branches often pierce the leaf-sheath.
- Dichosciadium** Domin. (*Azorella* p.p.). Umbell. (I. 2). 1 Austr.

- Dichostemma** Pierre. Euphorbiaceae (A. II. 8). 2 trop. Afr.
Dichotomanthes S. Kurz. Rosaceae (v). 1 Yunnan.
Dichroa Lour. Saxifragaceae (III). 1 Himal. and China to Java.
Dichrocephala L'Hérit. ex DC. Compositae (3). 8 warm Afr., As.
Dichrolepis Welw. (*Eriocaulon* p.p. *EP.*). Eriocaul. 1 trop. Afr.
Dichromena Michx. Cyperaceae (1). 12 Am.
Dichrostachys Wight et Arn. Leguminosae (1. 4). 10 palaeotrop.
 Stipules often thorny. Upper fls. of infl. ♂, yellow, lower neuter and white, rose, or purple.
Dichrotrichum Reinw. Gesneriaceae (1). 10 Malay Archip.
Dickinsia Franch. Umbelliferae (1. 2). 1 China.
Dicksonia L'Hérit. (excl. *Cibotium* Kaulf.). Cyatheaceae. 25 trop. and subtrop. and S. Hemisph. Most are tree ferns, e.g. *D. antarctica* Labill. (Austr., N. Z.). Sori marginal. For the Tartarian lamb cf. *Cibotium*.
Dicladanthera F. Muell. Acanthaceae (IV. B). 1 W. Austr.
Diclidanthera Mart. Styracaceae. 2 Brazil.
Diclidium Schrad. ex Nees = *Mariscus* Gaertn. (*BH.*) = *Cyperus* L. p.p.
Diclidocarpus A. Gray (*Trichospermum* *BH.*). Tili. 2 Java, Fiji.
DiCLIPTERA Juss. Acanthaceae (IV. B). 70 trop.
Diclis Benth. Scrophulariaceae (II. 3). 5 S. Afr., Madag.
Diclytra Borckh. = *Dicentra* Bernh. (Papav.).
Dicoelia Benth. Euphorbiaceae (A. I. 1). 1 Borneo.
Dicoma Cass. Compositae (12). 30 Afr., Madag., trop. As.
Dicoria Torr. et A. Gray. Compositae (5). 4 W. U.S.
Dicorynia Benth. Leguminosae (II. 5). 2 Guiana, N. Brazil.
Dicoryphe Thou. Hamamelidaceae. 13 Madag., Comoro Is.
Dicotyledones. One of the two great divisions of Angiospermae.
Dicraea (Du Pet. Th.) Tul. Podostemaceae. 7 Madag., Ceylon, India. Thallus (root) drifting from attached base, exogenously branched, with marginal secondary shoots. Fr. isolobous.
Dicraeanthus Engl. Podostemaceae. 1 trop. Afr.
Dicraepetalum Harms. Leguminosae (III. 1). 1 Somaliland.
Dicranocarpus A. Gray. Compositae (5). 1 Texas, Mexico.
Dicranolepis Planch. Thymelaeaceae. 15 trop. Afr.
Dicranopteris Bernhardt = *Gleichenia* Sm. (Polypod.).
Dicranostyles Benth. Convolvulaceae (1). 2 trop. S. Am.
Dicranotaenia Finet. Orchidaceae (II. 20). 1 Dahomey.
Dicrastylis Drumm. Verbenaceae (3). 8 N. and W. Austr.
Dicraurus Hook. f. Amarantaceae (3). 1 Texas, Mexico.
Dicrypta Lindl. = *Maxillaria* Ruiz et Pav. (Orchid).
Dictamnus L. Rutaceae (1). 1 Eur. As., *D. albus* L. (*D. Fraxinella* Pers.), dittany or candle-plant. The ethereal oil secreted by the pl. is volatile and inflammable, so that on hot calm days the air round it may sometimes be ignited. Fl. ♂; the unripe sta. are curved down, and bend up to dehisce. Fr. opens elastically.
Dictyandra Welw. Rubiaceae (1. 8). 2 W. trop. Afr.
Dictyanthus Decne. in DC. Asclepiadaceae (II. 4). 4 Mexico.
Dictyocaryum H. Wendl. (*Iriartea* p.p. *EP.*). Palmae (IV. 1). 1 trop. Am.
Dictyochloa Camus (*Ammochloa* p.p.). Gramineae (10). 1 N. Afr.

- Dictyoloma** A. Juss. Rutaceae (II). 2 Brazil, Peru.
Dictyoneura Blume (*Cupania* p.p. *BH.*). Sapind. (I). 3 Malay Arch.
Dictyophleba Pierre (*Landolphia* p.p.). Apocyn. (I. I). 1 trop. Afr.
Dictyosperma Regel (*Pirea* *EP.*). Cruciferae (2). 1 Turkestan.
Dictyosperma Wendl. et Drude. Palmae (IV. I). 3 Mascarenes.
Dictyostega Miers. Burmanniaceae. 5 trop. Am. and Afr.
Dictyoxiphium Hook. Polypodiaceae. 1 Cent. Am.
Dicyclophora Boiss. (*Pycnocycla* *BH.*). Umbell. (III. I). 1 Persia.
Dicymbe Spruce ex Benth. et Hook. f. Leguminosae (II. 8). 1 Braz.
Dicypellium Nees. Lauraceae (I). 1 Brazil, *D. caryophyllatum* (Mart.) Nees. Wood valuable; bark (*Cassia caryophyllata*) smells like cloves.
Dicyrta Regel (*Achimenes* p.p. *EP.*). Gesner. (II). 2 Guatemala.
Didactyle Lindl. = *Bulbophyllum* Thou. (Orchid.).
Didelotia Baill. Leguminosae (II. 3). 4 trop. Afr.
Didelta L'Hérit. Compositae (10). 3 S.W. Afr.
Didesmandra Stapf. Dilleniaceae. 1 Borneo.
Didesmus Desv. = *Rapistrum* Tourn. p.p. (Crucif.).
Didiciea King et Pantl. Orchidaceae (II. 6). 1 Sikkim.
Didieraceae, a fam. sometimes created for *Didierea*.
Didierea Baill. Sapindaceae (?). 4 Madag. Anomalous plants with the habit of cactus-like *Euphorbias*, and of doubtful affinity. See *Nat. Pfl.* III. 5, p. 461, *Kew Bull.* 1898, p. 97.
Didiplis Rafin. (*Peplis* p.p. *EP.*). Lythraceae. 1 N. Am.
Didiscus DC. (*Trachymene* *BH.*). Umbell. (I. I). 20 Malaya, Austr.
Didissandra C. B. Clarke. Gesneriaceae (I). 30 India, China.
Didymaea Hook. f. Rubiaceae (II. 11). 1 Mexico.
Didymanthus Endl. Chenopodiaceae (A). 1 W. Aust.
Didymeles Thou. Inc. sed. 1 Madagascar.
Didymia Phil. (*Mariscus* p.p. *BH.*). Cyperaceae (II). 1 Chili.
Didymocarpaceae = Gesneriaceae.
Didymocarpus Wall. (*Rottlera* Vahl). Gesneriaceae (I). 120 Indomal., China, Madag., Austr., trop. Afr.
Didymochlaena Desv. Polypodiaceae. 1 trop.
Didymochlamys Hook. f. Rubiaceae (I. 7). 1 Colombia. Epiphytic.
Didymopanax Decne. et Planch. Araliaceae (I). 24 trop. Am.
Didymopelta Regel et Schmalh. (*Astragalus* p.p. *BH.*). Leguminosae (III. 6). 1 Turkestan.
Didymophysa Boiss. Cruciferae (2). 1 Persia.
Didymoplexis Griff. (*Leucorchis* p.p. *EP.*). Orch. (II. 2). 10 Indomal.
Didymosperma H. Wendl. et Drude. Palmae (IV. I). 8 Indomal.
Didymotheca Hook. f. Phytolaccaceae. 4 Austr., Tasmania.
Dieffenbachia Schott. Aracea (V). 12 trop. Am. Fls. monoec., naked, the ♂ is a synandrium of 4 or 5 sta. *D. Seguine* Scott is the 'dumb cane' of the W. Ind., formerly used in torturing slaves; it renders speechless a person who chews a piece of the stem.
Diellia Brackenridge. Polypodiaceae. 8 Hawaiian Is.
Dielsia Gilg. Restionaceae. 1 Austr.
Dielsina O. Ktze. (*Polyceratocarpus* Engl. et Diels). Anonaceae (4). 1 trop. Afr.
Dielytra Cham. et Schlecht. = *Dicentra* Bernh. (Papav.).

- Dienia** Lindl. = *Microstylis* Nutt. (Orchid.).
- Dierama** C. Koch. Iridaceae (III). 4 trop. and S. Afr.
- Diervilla** Tourn. ex L. (*Weigelia* Thunb.). Caprifoliaceae. 8 E. As., N. Am. *D. florida* Sieb. et Succ., and others, cult. orn. shrubs. Fl. adapted to bees; changes colour after fert. (? only the effect of age); cf. *Ribes*, *Fumaria*, &c.
- Dietes** Salisb. = *Moraea* L. p.p. (Irid.).
- Dieudonnæa** Cogn. Cucurbitaceae (3). 1 Peru.
- Diffuse**, loosely spreading.
- Digera** Forsk. Amarantaceae (2). 1 trop. As., Afr.
- Digitalin**, *Digitalis*.
- Digitalis** (Tourn.) L. Scrophulariaceae (III. 1). 22 Eur., W. As., Canary Is. *D. purpurea* L. (foxglove), Brit. Fls. in racemes, one-sided by twisting of peduncles; adapted to fert. by bees. The l. are offic., containing the poisonous alkaloid digitalin.
- Digitaria** Heist. ex Adans. = *Panicum* L. p.p. (Gram.).
- Digitate** (l.), palmate with 5 (or 7) leaflets.
- Diglyphosa** Blume (*Chrysoglossum* BH.). Orchid. (II. a. II). 1 Java.
- Dignathe** Lindl. Orchidaceae (II. 19). 1 Mexico.
- Dignathia** Stapf. Gramineae (3). 2 E. trop. Afr.
- Digomphia** Benth. Bignoniaceae (2). 1 Guiana.
- Digraphis** Trin. = *Phalaris* L. p.p. (Gramm.).
- Digyroloma** Turcz. Acanthaceae (inc. sed.). 1 Madras.
- Diholcos** Rydberg (*Astragalus* p.p.). Legumin. (III. 6). 4 N. Am.
- Dilatris** Berg. Haemodoraceae. 2 S. Afr.
- Dildo** (W.I.), *Cereus Swartzii* Griseb.
- Dilkea** Mast. Passifloraceae. 5 N. Brazil.
- Dill**, *Peucedanum graveolens* Benth. et Hook. f.
- Dillenia** L. (incl. *Wormia* Rottb.). Dilleniaceae. 25 sp. Indomal.
- Dilleniaceae** (EP.; BH. incl. *Crossosomataceae*). Dicots. (Archichl. Parietales; Ranales BH.). 12 gen., 320 sp., trop., esp. well repres. in the Austr. 'scrub' veg. Most are trees and shrubs (many lianes) with alt. usu. leathery l. and cymose infl. Fl. usu. reg., ♂. K 5, or 3, 4 or even ∞ , spiral, persistent after flowering; C usu. 5; A ∞ , hypog., free or united at base; G. ∞ —1, free or $\pm$ united; styles usu. free; ov. ∞ —1, erect, anat., with ventral raphe. Plac. usu. inconspic., unthickened. Fr. dehisc. or not. Seed always with funicular aril united to the testa. Endosp. copious; embryo small, straight. *Chief genera*: *Dillenia*, *Hibbertia*.
- Dillwynia** Sm. in Kon. et Sims. Leguminosae (III. 2). 10 Austr.
- Dilobeia** Thou. Proteaceae (1). 1 Madagascar.
- Dilodendron** Radlk. Sapindaceae (1). 1 S. Brazil. Seeds yield oil.
- Dilophia** T. Thoms. Cruciferae (2). 5 Centr. As.
- Dimacria** Lindl. in Sweet. = *Pelargonium* L'Hérit. (Geran.).
- Dimeresia** A. Gray. Compositae (4). 1 Oregon.
- Dimeria** R. Br. Gramineae (2). 20 Indomal., S. China.
- Dimerocostus** O. Ktze. Zingiberaceae (II). 4 W. S. Am.
- Dimerostemma** Cass. Compositae (5). 1 Brazil.
- Dimetopis** DC. = *Trachymene* Rudge (BH.) = *Didiscus* DC. (Umb.).
- Dimorphandra** Schott. Leguminosae (II. 1). 10 trop. Am. *D. Mora* Benth. et Hook. furnishes excellent timber.

Dimorphanthera F. Muell. (*Agapetes* p.p.). Eric. (III. 2). 4 Malaya, Australia.

Dimorphanthus Cass. = *Conyza* L. (Comp.).

Dimorphanthus Miq. = *Aralia* Tourn.

Dimorphism, appearing in two forms, e.g. *flower*, *Asperula*, *Cassia*, *Exacum*, *Saintpaulia*, and *cf.* *Diocism*, *Heterostylism*; *fruit*, *Cardamine*, *Chenopodium*, *Dimorphotheca*; *inflorescence*, *Trifolium*; *leaf*, *Anisophyllea*, *Bidens*, *Dischidia*, *Ficus*, *Hedera*, *Heteranthera*, *Platycerium*, *Polygonum*, *Polypodium*, *Ranunculus*, *Sagittaria*, *Salvinia*, *Trapa*, and *cf.* *Water-plants*; *plant*, *Littorella*; *pollen*, *Faramea*; *root*, *Araceae*, *Ficus*, *Jussieua*, *Orchidaceae*; *shoot*, *Marcgravia*, *Salacia*; *stamens*, *Heeria*, *Monochaetum*.

Dimorphocalyx Thw. *Euphorbiaceae* (A. II. 5). 6 Indomal.

Dimorphochlamys Hook. f. *Cucurbitaceae* (3). 3 trop. W. Afr.

Dimorphocoma F. Muell. et Tate. *Compositae* (7). 1 C. Austr.

Dimorphotheca Vaill. ex L. *Compositae* (10). 20 S. and trop. Afr.

There are two kinds of fr. on the head (*cf.* *Calendula*).

Dinacria Haw. (*Crassula* p.p. *EP.*). *Crassulaceae*. 2 S. Afr.

Dinebra Jacq. *Gramineae* (11). 1 trop. Afr., As.

Dinemagonum A. Juss. *Malpighiaceae* (1). 4 N. Chili.

Dinemandra A. Juss. ex Endl. *Malpighiaceae* (1). 6 Peru, Chili.

Dinklagea Gilg. *Connaraceae*. 1 Liberia.

Dinochloa Buese. *Gramineae* (13). 6 Malay Archip.

Dinophora Benth. *Melastomaceae* (1). 2 trop. W. Afr.

Dinoseris Griseb. *Compositae* (12). 1 Argentina.

Dintera Stapf. *Scrophulariaceae* (II. 6). 1 trop. Afr.

Dinteracanthus C. B. Clarke ex Schinz. *Acanth.* (IV. A). 3 S. Afr.

Dioclea H. B. et K. *Leguminosae* (III. 10). 20 trop.

Diodia Gronov. *Rubiaceae* (II. 10). 35 trop. and sub trop. *D. maritima* Schum. et Thonn. is common to Afr. and Am.

Diocism (-ious), ♂ fl. on one pl., ♀ on another; *Antennaria*, *Arisaema*, *Aucuba*, *Cannabis*, *Mercurialis*, *Myrica*, *Rhamnus*, *Rhus*, *Salix*, *Taxus*.

Diolena Naud. *Melastomaceae* (1). 6 trop. S. Am.

Diomedia Cass. = *Borrchia* Adans. (Comp.).

Dionaea Ellis. *Droseraceae*. 1 Carolina, *D. muscipula* Ellis (*Venus'* fly-trap), in damp mossy places on the 'pine-barrens.' Short rhiz. bearing a rosette of l., which lie close to the soil. Each has a lower and an upper blade; the former may be regarded as a winged petiole, the latter has a quadrangular shape and the margins project as long teeth close together. The two halves of this part of the l. are bent upwards so as to present a flat V-form in section. The edge of each half is green, the inner part of the surface is covered with reddish dots, which under the microscope are seen to be digestive glands; unless stimulated, no secretion is carried on. On each half of the l. are three long hairs—the trigger-hairs—jointed at the base so that they fold downwards when the l. closes. The slightest touch to one of these, or a more vigorous stimulus to the surface of the l., causes an immediate closing. The teeth cross one another, and if an insect cause the movement, it is thus captured. The closing of the l. still continues till the two halves are tightly squeezed together. Then

the digestive glands commence to secrete a ferment which acts upon the proteids of the prey and renders them soluble, when they are absorbed by the l. (*cf.* *Drosera*). When the process is complete the l. opens again. [Macfarlane in *Contrib. from Bot. Lab. Pennsylv. Univ.* 1. 1892.]

Dioncophyllum Baill. Flacourtiaceae (5). 1 Congo.

Dionychia Naud. Melastomaceae (1). 2 Madagascar.

Dionysia Fenzl. Primulaceae (1). 15 alpine Persia, Afghanistan.

Dioon Lindl. Cycadaceae. 3 Mexico. The seeds are ground into meal, which contains much starch.

Dioscorea Plum. ex L. Dioscoreaceae. 200 trop. and subtrop. *D. pyrenaica* Bub. et Bordère (Pyrenees) is the only Eur. sp. They have twining annual stems arising from tubers which in different sp. are of different morphological nature. In *D. Batatas* Dcne., &c. the tuber arises by a lateral hypertrophy of the hypocotyl, and is variously regarded as a rhiz. or a root; in *D. sinuata* Vel., &c. it arises by lateral hypertrophy of the internodes above the cotyledon; in *D. pentaphylla* L., &c. it arises from the internode just above the cotyledon together with the hypocotyl, whilst in *D. villosa*, L., *D. quinqueloba* Thunb., &c., there is a fleshy rhiz. The tubers are known as yams; they contain much starch and are largely cult. for food in trop., esp. Am. The best are perhaps *D. alata* L. (white yam), *D. cayennensis* Link (negro yam), *D. trifida* L. f. (cush-cush; yampi). They are propagated by 'eyes' like potatoes. Small axillary tubers often form on the main stem and may also be used.

Dioscoreaceae (EP., BH.). Monocots. (Liliiflorae; Epigynae BH.). 9 gen., 220 sp., trop. and warm temp., climbing herbs or shrubs with tubers or rhizomes at the base (morphology varied; see gen.). L. alt., net-veined, often arrow-shaped; infl. racemose; fls. reg., usu. dioec., inconspic. P (6), tubular at base; A 6, or 3 and 3 stds.; $\bar{G}$ (3) usu. 3-loc. with axile, rarely 1-loc. with parietal, plac.; ov. usu. 2 in each loc., anatropous one above the other. Capsule or berry; embryo in horny endosp. The tubers of *Dioscorea* are valuable as food stuffs; those of *Testudinaria* are also used. *Chief genera*: *Dioscorea*, *Testudinaria*, *Tamus*.

Dioscoreophyllum Engl. Menispermaceae. 5 trop. Afr.

Dioscoreopsis O. Ktze. = *Dioscoreophyllum* Engl. (Menisp.).

Diosma L. Rutaceae (1). 11 S. Afr. Heath-like xerophytes.

Diosphaera Buser. Campanulaceae (1. 1). 3 E. Medit.

Diospyrinae (Warming). The 2nd cohort of Sympetalae.

Diospyros L. Ebenaceae. 200 trop. Many sp. yield the valuable wood ebony (*q.v.*). The sapwood is white and soft, the heart-wood hard and black. *D. reticulata* Willd. (Mauritius) and *D. Ebenum* Koen. (Ceylon) yield the finest ebony. *D. quaesita* Thw. (Ceylon) yields calamander wood. *D. Embryopteris* Pers. (gaub; India) fr. contains a sticky pulp, used for caulking. *D. Kaki* L. f. (Chinese date plum, persimmon) fr. is used as a sweetmeat when dried, *D. Lotus* L. (date-plum, temp. As.). *D. virginiana* L. (N. Am. ebony or persimmon, U.S.) cult. for both wood and fr. (*cf.* *Kew Bull.* 1911, p. 234).

Diotacanthus Benth. Acanthaceae (IV. B). 2 Indomal.

- Diothonea** Lindl. Orchidaceae (II. 6). 5 W. trop. S. Am.
Diotis Desf. Compositae (7). 1 coasts of Brit., W. Eur., Medit.
D. candidissima Desf. (*D. maritima* Sm.), cotton-weed.
Dipanax Seem. (*Pterotropia* Hillebr.). Aral. (1). 1 Hawaii.
Dipcadi Medic. Liliaceae (v). 40 Afr., Medit., trop. As. Cult. orn. fl.
Dipelta Maxim. Caprifoliaceae. 4 China.
Dipentaplandra O. Ktze. = *Pentadiplandra* Baill. (Tili.).
Dipentodon Dunn. Celastraceae. 1 China (*Kew Bull.* 1911, 310).
Diphaca Lour. (*Ormocarpum* Beav.). Legum. (III. 7). 9 [* warm.
Diphalangium Schau. Liliaceae (IV). 1 Mexico.
Diphasia Pierre. Rutaceae (IV). 1 trop. Afr.
Dipholis A. DC. Sapotaceae (I). 5 W. Indies.
Diphyllax Hook. f. (*Habenaria* p.p.). Orchid. (II. 1). 1 Sikkim.
Diphyllarium Gagnep. Leguminosae (III. 10). 1 Cochinchina.
Diphylla Michx. Berberidaceae. 2 Atl. N. Am., Japan (umbrella-leaf).
Diphysa Jacq. Leguminosae (III. 6). 12 Mexico, Cent. Am.
Dipidax Laws. ex Salisb. Liliaceae (I). 2 S. Afr.
Diplachne Beauv. Gramineae (10). 30 trop. and sub trop.
Diplacrum R. Br. (*Scleria* BH.). Cyperaceae (II). 3 trop.
Diplacus Nutt. = *Mimulus* L. p.p. (Scroph.).
Dipladenia A. DC. Apocynaceae (II. 1). 25 S. Am. Most are lianes climbing by hooks. Cult. orn. perf. fl.
Diplandra Hook. et Arn. Onagraceae (2). 1 Mexico.
Diplantherum K. Schum. Tiliaceae. 1 trop. Afr.
Diplanthera Banks et Soland. ex R. Br. Bignon. (2). 4 Austr., Malayá.
Diplanthera Thou. (*Halodule* Endl.; *Cymodocea* BH.). Potamogetonaceae. 2 trop.
Diplarche Hook. f. et Thoms. Ericaceae (I. 3). 2 Sikkim.
Diplarpea Triana. Melastomaceae (I). 1 Colombia.
Diplarrhena Labill. Iridaceae (II). 2 S. Austr., Tasm.
Diplasia Rich. Cyperaceae (II). 2 trop. S. Am., W. Ind.
Diplaspis Hook. f. (*Huanaca* Cav.). Umbell. (I. 2). 2 Austr., Tasm.
Diplaziopsis C. Chr. Polypodiaceae. 1 E. As., Polynesia.
Diplazium Sw. Polypodiaceae. 280 trop., Chi., Jap.
Diplectria Rchb., O. Ktze. Melast. (I). 17 Malaya. Cult. orn. fl.
Diplocalymma Spreng. Inc. sed. 1, habitat?
Diplocaulobium Kränzlin (*Dendrobium* p.p. EP.). Orchidaceae (II. 15). 30 Malaya to Fiji.
Diplocentrum Lindl. Orchidaceae (II. 20). 3 Indomal.
Diplochita DC. = *Miconia* Rhiz et Pav. (Melast.).
Diploclinium Lindl. = *Begonia* L. p.p. (Begon.).
Diploclesia Miers (*Cocculus* p.p. BH.). Menisp. 4 E. As.
Diplocrater Hook. f. (*Tricalysia* p.p. EP.). Rubiac. (I. 8). 2 trop. Afr.
Diplocyatha N.E. Br. Asclepiadaceae (II. 3). 1 S. Afr.
Diplocyathium H. Schmidt (*Euphorbia* p.p.). Euph. (A. II. 8). 1 Eur.
Diplodiscus Turcz. Tiliaceae. 1 Phil. Is.
Diploglottis Hook. f. Sapindaceae (I). 2 Austr.
Diplokeleba N.E. Br. Sapindaceae (I). 1 Argentina.
Diploknema Pierre. Sapotaceae (I). 1 Borneo.

- Diplolaena** R. Br. Rutaceae (I). 4 W. Austr.
Diplolegnon Rusby. Gesneriaceae (I). 1 S. Am.
Diplolepis R. Br. Asclepiadaceae (II. 1). 2 S. Am.
Dipolophium Turcz. Umbelliferae (III. 5). 2 trop. Afr.
Diplomeris D. Don. Orchidaceae (II. 1). 4 Himal., China.
Diplopappus Cass. = *Aster* Tourn. p.p. (Comp.).
Diplopeltis Endl. Sapindaceae (II). 3 Austr., Madag.
Diplophractum Desf. Tiliaceae. 1 Java.
Diplopogon R. Br. Gramineae (8). 1 W. Austr.
Diploprora Hook. f. Orchidaceae (II. 20). 1 trop. As.
Diplopterys A. Juss. Malpighiaceae (I). 1 Guiana.
Diplopyramis Welw. (*Oxygonum* p.p. EP.). Polygon. (II. 2). 1 trop. Afr.
Diplora Baker. Polypodiaceae. 2 S.E. As.
Diplorrhynchus Welw. Apocynaceae (I. 3). 5 trop. Afr.
Diplospora DC. (*Tricalysia* p.p. EP.). Rubi. (I. 8). 15 trop. As., China.
Diplosporopsis Wernham. Rubiaceae (I. 8). 2 S. Nigeria.
Diplostephium H. B. et K. Compositae (3). 20 trop. S. Am.
Diplostigma K. Schum. Asclepiadaceae (II. 1). 1 E. Afr. steppes.
Diplotaenia Boiss. (*Peucedanum* p.p. BH.). Umbell. (III. 6). 1 Persia.
Diplotaxis DC. Cruciferae (2). 20 Eur., Medit. (2 Brit.).
Diplothemium Mart. Palmaceae (IV. 2). 4 S. Am.
Diplotropis Benth. Leguminosae (III. 1). 7 trop. Am.
Diplusodon Pohl. Lythraceae. 50 Brazil.
Diplycosia Blume. Ericaceae (II. 2). 20 Indomal.
Dipodium R. Br. Orchidaceae (II. 17). 5 Austr., Malaya.
Dipoma Franch. Cruciferae (2). 1 Yunnan.
Diporidium Wendl. f. ex Bartl. et Wendl. f. = *Ochna* L. (Ochn.).
Diposis DC. Umbelliferae (I. 2). 2 temp. S. Am.
Dipsacaceae (EP., BH.). Dicots. (Sympet. Aggregatae; Asterales BH.). 10 gen., 150 sp., chiefly N. temp., [*], and trop. and S. Afr. Most are herbs with opp. exstip. l. (connate in Dipsacus), and cymes (Triplostegia, Morina) or heads of fls. That the heads are also cymose is indicated by the fact that the fls. do not open in strictly centripetal order. The outer fls. have the corolla more or less drawn out on one side (cf. Compositae, Cruciferae, &c.); bracteoles of the ordinary kind are rare (Triplostegia). Most have an epicalyx, a cup-shaped organ springing from the base of the ovary, and usu. regarded as composed of the two united bracteoles. K and C 5-merous or 4-merous by union of two members; A 4, epipetalous; $\bar{G}$ (2), 1-loc. with one pend. anatr. ov. Fls. usu. protandr. of the flower class B'. Fr. an achene (cf. Compositae) usu. enclosed in the epicalyx; endosperm. Several are cult. orn. fl.; Dipsacus yields teasels. *Chief genera*: Knautia, Dipsacus, Scabiosa.
- Dipsacales** (Warming). The 7th cohort of Sympetalae.
- Dipsacus** L. Dipsaceae. 12 Medit., Eur., Afr. *D. sylvestris* Mill. (teasel), Brit. The connate leaves form troughs round the stem in which rain-water collects. The protandr. fls. are chiefly visited by bees. *D. fullonum* L. (fuller's teasel) has hooked bracts; the fr.-heads are used for raising the nap upon cloth (*Kew Bull.* 1912, p. 345).

Dipteracanthus Nees = *Ruellia* L. p.p. (Acanth.).

Dipteranthemum F. Muell. *Amarantaceae* (2). 1 Austr.

Dipteranthus Barb. Rodr. (*Zygostates* EP.). *Orchid.* (II. 19). 2 Brazil.

Dipteris Reinw. *Polypodiaceae*. 5 As., Polynesia.

Dipterocarpaceae (EP., BH. incl. *Ancistrocladaceae*). Dicots. (Archichl. Parietales; Guttiferales BH.). 16 gen., 320 sp., trop. Afr. and As., chiefly in India, mostly tall, little branched trees with entire leathery stip. l., and racemose infls. of ♂, reg., pentamerous fls. Receptacle flat or slightly concave. K 5; C 5 conv.; A 5, 10, 15 or more; G (3), 3-loc., with 2 ov. in each loc. Fr. usu. a 1-seeded nut enclosed in the K, some of whose l. grow out into wings serving as an aid in wind-carriage of the seeds. No endosp. All contain resin-passages. Some gregarious in growth. Many are very valuable as timber trees, and in other ways. *Chief genera*: *Dipterocarpus*, *Dryobalanops*, *Shorea*, *Vatica*, *Vateria*. (BH. chars. incl. those of *Ancistrocladaceae*.)

Dipterocarpus Gaertn. *Dipterocarpaceae*. 65 India, Ceylon to Phil. Is. The large amplexicaul stipules protect the young bud (cf. *Magnolia*, &c.). Several yield wood-oil or Gurjun balsam, a resin obtained by tapping, used as a varnish. Many yield useful timber.

Dipterocome Fisch. et Mey. *Compositae* (9). 1 Persia.

Dipterodendron Radlk. *Sapindaceae* (1). 2 Costa Rica.

Dipteronia Oliv. *Aceraceae*. 2 Centr. China. Mericarp winged all round.

Dipteropeltis Hallier f. *Convolvulaceae* (1). 1 Cameroons.

Dipterosiphon Huber. *Burmanniaceae*. 1 Para.

Dipterostemon Rydberg (*Brodiaea* p.p.). *Liliaceae* (IV). 4 W. N. Am.

Dipterygium Decne. (*Pteroloma* Hochst.). *Capparidaceae* (*Cruciferae* BH.). 5 Punjab to Nubia.

Dipteryx Schreb. (*Coumarouna* Aubl.). *Leguminosae* (III. 8). 8 trop. Am. Fr. one-seeded indeh. *D. odorata* Willd. furnishes Tonka or Tonquin beans (the seeds) used in snuff, perfumery, &c. Wood useful.

Diptychandra Tul. *Leguminosae* (II. 8). 3 Brazil, Bolivia.

Diptychocarpus Trautv. *Cruciferae* (4). 1 Centr. As.

Dipyrena Hook. *Verbenaceae* (1). 1 temp. S. Am.

Dirachma Schweinf. *Geraniaceae*. 1 Socotra.

Dirca L. *Thymelaeaceae*. 2 N. Am.

Dircaea Decne. = *Gesnera* Mart. (BH.) = *Corytholoma* Decne.

Dirichletia Klotzsch. *Rubiaceae* (1. 2). 12 trop. Afr., Madag.

Disa Berg. *Orchidaceae* (II. 1). 100 S. and trop. Afr.; Masc. Cult. orn. fl.

Disaccanthus Greene (*Streptanthus* p.p.). *Cruc.* (1). 6 W. N. Am.

Disachaena Zoll. et Mor. *Umbelliferae*. Nomen.

Disakisperma Steud. *Gramineae* (inc. sed.). 1 Mexico.

Disanthus Maxim. *Hamamelidaceae*. 1 Japan.

Disarticulate, to separate at a joint.

Disc, a flattening of the receptacle above the K, *Anacardiaceae*, *Celastraceae*, *Rutaceae*; **-flower**, *Compositae*; **-oid**, like a disc.

Discaria Hook. *Rhamnaceae*. 20 Andes, N.Z., Austr.

Dischidia R. Br. (incl. *Conchophyllum* Blume). *Asclepiadaceae* (II. 4). 70 Indomal., Polynes., Austr. Epiphytes, climbing by adv. r., and

with fleshy l. covered by wax. The curious pitcher-plant, *D. Rafflesiana* Wall., besides the ordinary l., has pitcher-l. Each is a pitcher with incurved margin, about 10 cm. deep. Into it grows an adv. r. developed from the stem or petiole just beside it. The pitcher may hang with its mouth upwards or may stand horizontally or upside down. It usu. contains a lot of *débris*, largely carried into it by nesting ants. Most contain $\pm$ rain water, so that perhaps they act as humus collectors and water reservoirs. The inner surface is waxy, so that the water cannot be absorbed by the pitcher itself, but must be taken up by the roots.

Developmental study shows the pitcher to be a l. with its lower side invaginated. The existing sp. illustrate all stages. Many, e.g. *D. bengalensis* Colebr., have bi-convex l.; others have the under surface concave, e.g. *D. (C.) Collyris* Wall., and the roots are developed under and sheltered by the concave l. A further invagination would lead to *D. Rafflesiana*. (Treub in *Ann. Buitenz.* III. 1883, Haberlandt's *Tropenreise*, p. 168, and two papers in *Ann. of Bot.* 1893.)

Dischidiopsis Schlechter (*Dischidia* p.p.). Asclep. (II. 3). 2 N. G., Phils.

Dischisma Choisy. Scrophulariaceae (II. 7). 10 S. Afr.

Dischistocalyx (*Distichocalyx*) Lindau. Acanth. (IV. A). 7 trop. Afr.

Disciflorae (BH.). The 2nd series of Polypetalae.

Disciphanis Eichl. Menispermaceae. 8 trop. S. Am.

Discocactus Pfeiff. (*Echinocactus* p.p. E.P.). Cact. (III. 1). 3 trop. Am., W.I.

Discocalyx Mez. Myrsinaceae (II). 8 Malaya, Polynesia.

Discocarpus Klotzsch. Euphorbiaceae (A. I. 1). 3 Brazil, Guiana.

Discoglypremna Prain. Euphorbiaceae (A. II. 2). 1 trop. Afr.

Discogyne Schlechter. Saxifragaceae (V). 1 New Guinea.

Discolobium Benth. Leguminosae (III. 7). 6 Brazil, Paraguay.

Discoluma Baill. (*Chrysophyllum* p.p.). Sapot. (I). 1 Brazil.

Discontinuous distribution, cf. Geographical Distribution.

Discophora Miers (*Kummeria* Mart.). Icacin. 2 trop. S. Am.

Discopleura DC. Umbelliferae (III. 5). 2 N. Am.

Discopodium Hochst. Solanaceae (2). 1 trop. Afr.

Discostigma Hassk. = *Garcinia* L. p.p. (Guttif.).

Discrete, separate.

Disella Greene (*Sida* p.p.). Malvaceae (2). 4 N. Am.

Diselma Hook. f. (*Fitzroya* p.p.). Coniferae. 1 Tasmania.

Disemma Labill. = *Passiflora* L. p.p. (Passifl.).

Disepalum Hook. f. Anonaceae (1). 4 Indomal.

Disparago Gaertn. Compositae (4). 5 S. Afr.

Dispersis Sw. Orchidaceae (II. 1). 30 trop. Afr., Madag., As.

Disperma C. B. Clarke. Acanthaceae (IV. A). 7 trop. Afr.

Dispersal of seeds may be *occasional*, as by floating trees, ice, &c., tornados, mud on birds' feet, the voiding of the crops of carnivorous birds, &c. (see *Origin of Species*, chap. XII), or *regular*, by ways which may be classed in four heads. By **wind** are carried *directly* the spores of ferns, &c., seeds of *Pyrola*, *Orchidaceae*, some *Caryophyllaceae*, &c., by *censer-mechanisms* (see *Aconitum*), *Campanula*,

Caryophyllaceae, Delphinium, Iridaceae, Liliaceae, Papaver; *winged seeds* in Bignoniaceae, Bromeliaceae, Casuarina, Millingtonia, Pinus, Zanonía; *winged fruits* in Abronia, Aceraceae, Bignoniaceae, Carpinus, Dipterocarpaceae, Fraxinus, Liriodendron, Malpighiaceae, Ptelea, Pterocarpus, Rumex, Serjania, Terminalia, Tripteris. Ulmus, Ventilago; *hairs*, forming a *parachute mechanism*, in seeds of Apocynaceae, Asclepiadaceae, Epilobium, Gossypium, Salix, &c., in fruits of Anemone, Clematis, Compositae, Eriophorum, Typha, Valerianaceae, &c.

By **animals** are carried, as *inside* passengers, the seeds in edible fruits (*q.v.*), and as *outside* passengers the *hooked fr.* of Asperula, Bidens, Blumenbachia, Cenchrus, Circaea, Daucus, Galium, Geum, Harpagophytum, Martynia, Medicago, Tragoceros, Triumfetta, Xanthium, &c., the *glandular fr.* or seed of Allionia, Boerhaavia, Pisonia, Plumbago, Siegesbeckia, &c. By **water** Cerbera, Cocos, Crinum, Nuphar, Nymphaea, Potamogeton, &c. By **explosive mechanisms** are scattered the seeds of Alstroemeria, Balsaminaceae, Biophytum, Buxus, Cardamine, Cyclanthera, Dorstenia, Ecballium, Elaterium, Eschscholtzia, Geranium, Hura, Impatiens, Ricinus, Ulex, Viola, &c. As a general rule, the dispersal of seed by any of these mechanisms is only to a very small distance, but they may at any time be of great importance by enabling transport over long distances.

Disporopsis Hance. Liliaceae (VII). 1 S.E. China.

Disporum Salisb. Liliaceae (VII). 15 N. temp. As. and Am.

Dissanthelium Trin. Gramineae (10). 4 California to Mexico.

Dissected, deeply divided.

Dissepiment, septum.

Dissiliaria F. Muell. Euphorbiaceae (A. I. 1). 3 warm Austr.

Dissochaeta Blume. Melastomaceae (1). 25 Indomal.

Dissochondrus O. Ktze. (*Setaria* BH.). Gramineae (5). 1 Hawaii.

Dissomeria Hook. f. Flacourtiaceae (9) (Samyd. BH.). 1 W. Afr.

Dissothrix A. Gray. Compositae (2). 1 N.E. Brazil.

Dissotis Benth. Melastomaceae (1). 50 Afr.

Distal, furthest from axis.

Distasis DC. (*Chaetopappa* DC.). Compositae (3). 2 Texas, Mexico.

Disteganthus Lem. Bromeliaceae (4). 2 Guiana.

Distegia Klatt (*Didelta* EP). Compositae (10). 1 Austr.

Dietegocarpus Sieb. et Zucc. = Carpinus L. (Betulac.).

Distemma Lem. = Passiflora (L.) (Passifl.).

Distemon Wedd. Urticaceae (3). 1 Indomal.

Distemonanthus Benth. Leguminosae (II. 5). 1 Guinea.

Disterrigma Niedenzu ex Drude (*Vaccinium* p.p.). Ericaceae (III. 1). 3 trop. Am.

Distiacanthus Linden (*Bromelia* p.p.). Bromeliaceae (4). 2 S. Am.

Distichella Van Tiegh. (*Dendrophthora* p.p.). Loranth. 3 W.I.

Distichia Nees et Meyen. Juncaceae. 3 Andes.

Distichlis Rafin. Gramineae (10). 4 Am. *D. maritima* Rafin. also Austr., used for binding sandy soil (*cf.* Ammophila, Carex).

Distichocalyx (*Dischistocalyx*) T. Anders. Acanth. (IV. A). 7 trop. Afr.

- Distichostemon** F. Muell. Sapindaceae (11). 1 N. Austr.
Distictella O. Ktze. = *Distictis* Bur., non DC. (Bignon.).
Distictis Bur., Mart. Bignoniaceae (1). 5 Brazil, Guiana.
Distoecha Phil. Compositae (13). 1 Chili.
Distomanthera Turcz. Saxifragaceae (inc. sed.). 1 S. Am.
Distribution, geographical, see Geog. Dist.; **of seeds**, see Dispersal;
of sexes, see Dioecism, Monoecism, Andro- and Gyno-mon- and
 di-oecism, Polygamy.
Distylium Sieb. et Zucc. Hamamelidaceae. 4 E. As.
Dita bark, *Alstonia scholaris* R. Br.
Ditassa R. Br. Asclepiadaceae (11. 1). 75 S. Am.
Ditaxis Vahl ex A. Juss. (*Argithamnia* BH.). Euph. (A. 11. 2). 20
 Am., W.I.
Ditch-grass (Am.), *Ruppia maritima* L.
Dithyrea Harv. (*Biscutella* p.p. BH.). Cruc. (3). 2 S.W. U.S.
Dithyrocarpus Kunth. = *Floscopa* Lour. (Commel.).
Ditta Griseb. Euphorbiaceae (A. 11. 7). 1 Cuba.
Dittander, *Lepidium latifolium* L.
Dittoceras Hook. f. Asclepiadaceae (11. 3). 1 Sikkim.
Dittostigma Phil. Solanaceae (4). 1 Chili.
Diuranthera Hemsl. (*Paradisea* p.p.). Lili. (111). 2 China.
Diuris Sm. Orchidaceae (11. 2). 20 Austr.
Divi-divi, *Caesalpinia Coriaria* Willd.
Division of labour (sta.), *Cassia*, *Commelina*, *Heeria*.
Dizygostemon Radlk. (*Beyrichia* p.p. BH.). Scroph. (11. 6). 1 Brazil.
Dizygotheca N.E. Br. Araliaceae (1). 5 New Caledonia.
Dobera Juss. Salvadoraceae. 3 trop. Afr., As.
Dobinea Buch.-Ham. Anacardiaceae (5) (Sapindaceae BH.). 1 Hima-
 laya. ♀ fl. naked.
Dobrowskya Presl = *Lobelia* L. (BH.) = *Monopsis* Salisb. p.p.
Dock, *Rumex*.
Docynia Decne. Rosaceae (11). 3 Himal., Burma.
Dodartia (Tourn.) L. Scrophulariaceae (11. 6). 1 S. Russia, W. As.
Dodder, *Cuscuta*.
Dodecadenia Nees. Lauraceae (1). 3 Himal.
Dodecadia Lour. Flacourtiaceae (inc. sed.). 1 China.
Dodecaspermum Forst. Inc. sed. Nomen.
Dodecatheon L. Primulaceae (2). 15 N. Am., N.E. As. Like Cyclamen. Cult. orn. fl. (American cowslip).
Dodonaea L. Sapindaceae (11). 50 trop., esp. Austr.
Doellingeria Nees (*Aster* L. p.p.). Compositae (3). 6 N. Am.
Dog-bane (Am.), *Apocynum*; **-daisy**, *Chrysanthemum Leucanthemum* L.; **-rose**, *Rosa canina* L.; **-s tail grass**, *Cynosurus*; **-s tooth grass**, *Cynodon Dactylon* Pers.; **-violet**, *Erythronium*; **-wood**, *Cornus sanguinea* L., (W.I.) *Piscidia*.
Dolia Lindl. Nolanaceae. 18 W. S. Am.
Dolichanthus C. H. Wright. Loganiaceae. 1 New Guinea.
Dolichandra Cham. (*Macfadyena* BH.). Bignon. (2). 1 S. Brazil.
Dolichandrone Fenzl. Bignoniaceae (2). 10 Madag. to Malaya.
Dolichanthera Schlechter et Krause. Rubi. (1. 7). 1 New Caled.
Dolichodelphys K. Schum. et Krause. Rubiaceae (1. 8). 1 Peru.

- Dolichogyne** DC. = *Nardophyllum* Hook. et Arn. (Comp.).
Dolicholobium A. Gray. Rubiaceae (I. 5). 5 Fiji to New Guinea.
Dolicholus Medic. = *Rhynchosia* Lour. (Legum.).
Dolichometra K. Schum. Rubiaceae (I. 2). 1 E. trop. Afr.
Dolichopsis Hassler. Leguminosae (III. 10). 1 Paraguay.
Dolichos L. Leguminosae (III. 10). 40 trop. *D. Lablab* L. largely cult. in the trop. for its ed. pods *D. biflorus* L. (horse-gram) cult. in India, &c. for feeding horses and cattle.
Dolichosiphon Phil. Solanaceae (inc. sed.). 1 Chili.
Dolichostylis Turcz. (*Stenonema* EP.). Crucif. (inc. sed.). 1 Colombia.
Doliocarpus Roland. Dilleniaceae. 25 trop. S. Am.
Dollee-wood (W.I.), *Myristica surinamensis* Roland.
Dolophragma Fenzl (*Arenaria* p.p. BH.). Caryoph. (I. 1). 2 Nepal.
Dolosanthus Klatt (*Vernonia* p.p.). Compositae (I). 1 trop. Afr.
Domatia, cf. *Acarodomatia*.
Dombeya Cav. Sterculiaceae. 80 Afr., Madag.
Domeykoa Phil. Umbelliferae (I. 2). 1 Chili.
Dominant, very abundant and widespread.
Domingoa Schlechter (*Epidendrum* p.p.). Orch. (II. 6). 2 W. Ind.
Donacodes Blume = *Amomum* L. p.p. (Zingib.).
Donaldsonia Baker f. Passifloraceae. 1 trop. Afr.
Donatia Forst. Stylidiaceae, formerly Saxifragaceae (I). 2 Chili, New Zealand.
Donax Lour. (*Clinogyne* BH.). Marantaceae. 2 Indomal.
Dondia Adans. (*Suaeda* Forsk.). Chenopodiaceae (B). 15 N. Am.
Dondia Spreng. = *Hacquetia* Neck.
Donella Pierre (*Chrysophyllum* p.p.). Sapot. (I). 3 trop. Afr.
Donia G. Don (*Clianthus* p.p.). Leguminosae (III. 6). 2 Austr., N. Zealand. Cult. orn. fl. under the name *C. Dampieri* Cunn.
Doniophyton Wedd. Compositae (12). 3 Chili, Argentina.
Donnellia C. B. Clarke (*Callisia* p.p.). Commelin. 1 C. Am.
Donnellsmithia Coulter et Rose. Umbell. (III. 4). 1 Guatemala.
Dontostemon Andrz. Cruciferae (4). 8 Centr. As.
Donzellia Tenore. Euphorbiaceae (inc. sed.). 1 Brazil.
Doob grass, *Cynodon Dactylon* Pers.
Doodia R. Br. Polypodiaceae. 5 Ceylon to Austr. and N.Z.
Doon (Ceylon), *Doona*.
Doona Thw. Dipterocarpaceae. 11 Ceylon. Timber, resin.
Doorweed (Am.), *Polygonum aviculare* L.
Dopatrium Buch.-Ham. ex Benth. Scrophul. (II. 6). 10 palaeotrop.
Doratoxylon Thou. Sapindaceae (II). 1 Mascarenes.
Dorema D. Don. Umbelliferae (III. 6). 4 W. Centr. As. *D. ammoniacum* D. Don is the source of the gum-resin gum-ammoniacum (medic.), obtained by puncturing the stem.
Doria Thunb. = *Othonna* L. (BH.) = *Senecio* Tourn. (Comp.).
Doritis Lindl. Orchidaceae (II. 20). 5 Indomal
Dormant buds, buds which do not develop with the rest.
Doronicum Tourn. ex L. Compositae (8). 25 N. temp.
Dorothea Wernham. Rubiaceae (I. 8). 1 S. Nigeria.
Dorsal (surface), lower, away from axis, but not very consistently used;
dorsi-fixed (anther), jointed to filament by its whole length; -**ventral**.

with upper and lower sides differing in structure, leaves, creeping shoot, many fl., e.g. *Aconitum*, *Delphinium*, *Labiatae*, *Leguminosae*, *Orchidaceae*. Cf. esp. *Podostemaceae*, and see *Boraginaceae*.

Dorstenia Plum. ex L. Moraceae (I). 80 trop. Herbs or shrubs with peculiar cymose infl. The common recept. of the fls. is a flat or hollowed fleshy structure, often > an inch wide. Fls. unisexual, sometimes all of one sex on one receptacle, sometimes intermingled with several ♂ round one ♀, sunk in the receptacle round whose edge project a number of bracts. P-segments completely united. Sta. in the ♂ usu. 2. The fr. when ripe is shot out of the receptacle; the latter becomes very turgid and presses on the fr. and at length ejects it as one might fillip away a bit of soap between finger and thumb.

Dortmannia L.=*Lobelia* L. (Campan.).

Doryalis (*Dovyalis*) E. Mey. Flacourtiaceae (4). 15 Afr., Ceylon. Some (cf. *Aberia*) have ed. fr.

Doryanthes Correa. Amaryllidaceae (II). 3 Austr.

Dorycnium L. Leguminosae (III. 5). 10 Medit.

Doryopteris J. Sm. Polypodiaceae. 45 trop. and subtrop.

Doryphora Endl. Monimiaceae. 1 New S. Wales.

Dorystephania Warb. Asclepiadaceae (II. 3). 1 Phil. Is.

Dorystoechas Boiss. et Heldr. Labiatae (VI). 1 W. As.

Dossinia C. Morr. Orchidaceae (II. 2). 1 Borneo, cult. orn. l. under the name *Anoetochilus Lowii* Hort.

Dessinimaria × Rolfe. Orchidaceae. Hybrid of last and *Haemaria*.

Douarrea Montr. Inc. sed. 2 New Caled.

Double coconut, *Lodoicea Sechellarum* Labil.; -flower, fl. with sta. changed to petals (in Compositae, with disc fl. changed to ray fl.); -needles, cf. Coniferae.

Douglas fir, *Pseudotsuga Douglasii* Carr.

Douglasia Lindl. Primul. (I). 3 arct. N. Am., 1 S. Eur. (alpine).

Doum palm, *Hyphaene*.

Dove-orchid, *Peristeria elata* Hook.; -wood (W.I.), *Alchornea*.

Dovea Kunth. Restionaceae. 10 S. Afr. Used for thatch.

Dovyalis (*Doryalis*) E. Mey. Flacourtiaceae (4). 15 Afr., Madag., Ceylon. Cf. *Aberia*.

Downingia Torr. (incl. *Clintonia* Dougl.). Campanul. (III). 3 Pac. Am. *D. pulchella* Torr. has no twisting of the floral axis, or not > 90°.

Down tree (W.I.), *Ochroma Lagopus* Sw.

Downy, covered with fine soft hairs.

Doxantha Miers (*Bignonia* p.p. BH.). Bignon. (I). 1 U.S.

Doyerea Grosourdy ex Bello (*Corallocarpus* p.p. E.P.). Cucurbitaceae (2) (Myrtaceae BH.). 2 W.I., Venezuela.

Draba Dill. ex L. Cruciferae (4). 150 N. temp. and arctic, and south-west. N. Am.; 5 in Brit. (whitlow-grass), incl. *D. verna* L. which occurs in Eur. in a vast number of vars. which breed true, and were distinguished as sp. by Jordan (cf. works on Mendelism). Most are tufted, ± xero. with hairy or fleshy l.

Dracaena Vand. Liliaceae (VI). 40 Old World trop. Mostly trees, whose stems branch and grow in thickness (extra-fascicular cambium). The famous dragon-tree of Teneriffe (*D. Draco* L.), blown down in

1868, was 70 ft. high and 45 ft. in girth and was supposed to be 6000 years old. A resin exudes from the trunk of this sp. (dragon's blood); the original dragon's blood appears to be that of *D. (innabari)* Balf. f. (Socotra). [Cf. Pleomela, and see N. E. Brown in *Kew Bull.* 1914, p. 273.]

Dracamina Nieuwland (*Cardamine* p.p.). Crucifer. (2). 1 Atl. U.S.

Dracocephalum L. Labiatae (IV). 40 N. temp.

Dracontiodides Engl. Araceae (IV). 1 S. Brazil.

Dracontium L. Araceae (IV). 10 trop. Am. The sympodial rhiz. gives rise yearly to one enormous l. and an infl. The l. has 3 chief divisions, and the lat. ones develop dichot. at first. Fl. ♂ with P.

Dracontomelum Blume. Anacardiaceae (2). 6 Malaya to Fiji.

Dracophyllum Labill. (excl. *Sphenotoma* R. Br.). Epacridaceae (2). 25 N.Z., Austr., New Caled. The sheathing l. leave ring-scars when they fall.

Dracunculus (Tourn.) Adans. Araceae (VII). 2 Medit. Fert. like Arum.

Dragon-root (Am.), *Arisaema*; -'s blood, -tree, *Dracaena*.

Drakaea Lindl. Orchidaceae (II. 2). 4 Austr.

Drake-Brockmania Stapf. Gramineae (10). 1 Brit. Somaliland.

Draperia Torr. Hydrophyllaceae. 1 California.

Drapetes Banks. Thymelaeaceae. 6 S. Am., N.Z. to New Guinea.

Drebbelia Zoll. Olacaceae. 1 Bali.

Dregea E. Mey. Asclepiadaceae (II. 3). 5 S. Afr. to China.

Drejera Nees (*Jacobinia* BH.). Acanthaceae (IV. B). 3 trop. Am.

Drejerella Lindau. Acanthaceae (IV. B). 3 W. Indies.

Drepananthus Maingay ex Hook. f. Anonaceae (4). 2 Malay Penin.

Drepanium, a monoch. cyme with each successive branch on same side of relatively main axis, and in same plane, *Juncus*, *Marantaceae*.

Drepanocarpus G. F. W. Mey. Leguminosae (III. 8). 8 trop. Am., Afr.

Drepanolobus Nutt. ex Torr. et Gray = *Hosackia* Dougl. p.p.

Drepanostemma Jumelle et Perrier. Asclep. (II. 1). 1 Madag.

Driessenia Korth. Melastomaceae (1). 5 Malaya.

Drimia Jacq. Liliaceae (V). 25 Afr.

✓ **Drimiopsis** L. et Paxt. Liliaceae (V). 5 S. and trop. Afr. Cult. orn. fl.

Drimycarpus Hook. f. Anacardiaceae (4). 1 E. Himal.

Drimys Forst. Magnoliaceae. 10 S. Am., and N.Z. to Borneo. There is a distinction between calyx and corolla (cf. *Illicium*). The bark of *D. Winteri* Forst. (Winter's bark) is medicinal.

Drimyspermum Reinw. = *Phaleria* Jack (Thymel.).

Drinks, cf. Alcohol; infusion drinks from seeds of *Coffee*, *Thea*, *Theobroma*, *Cola*, *Paullinia*, l. of *Thea*, *Ilex*, *Catha*, *Priva*, *Stachytarpheta*, and root of *Cichorium*.

Driodium (Cl.), a dry thicket formation.

Drip-tip, cf. *Acer*, and *Artocarpus*, *Begonia*, *Boehmeria*, *Ficus*.

Droguetia Gaudich. Urticaceae (5). 4 trop. As., Afr., Madag.

Droogmansia De Wild. (*Desmodium* p.p.). Legu. (III. 7). 4 trop. Afr.

Drooping of young l., *Aesculus*, *Bauhinia*, *Cinnamomum*, *Dryobalanops*; **of young shoot**, *Amherstia*, *Brownea*, *Saraca*.

Dropper, young immature bulb.

Dropseed grass (Am.), *Sporobolus*, *Muhlenbergia*.

Dropwort, *Filipendula vulgaris* Moench.; **water-**, *Oenanthe*.

Drosera L. Droseraceae. 90 trop. and temp. 3 in Brit. (sundew).

D. rotundifolia L. abundant in bogs. Herbs usu. with creeping rhiz. and rosettes of l., insectivorous. The blade of the l. is circular in some sp., elongated in others, and is set with curious tentacles; these are emergences containing vascular bundles and ending in swollen reddish heads which secrete a sticky glistening fluid. Flies and other insects mistaking it for honey are held by it. The tentacles are exceedingly sensitive to continued pressure even by the lightest bodies; the result is to cause an inward and downward movement of the head of the tentacle, finally placing the fly upon the blade of the l. At the same time the stimulus passes to the surrounding tentacles causing them also to bend downwards to the same point. The victim is thus smothered and now the glandular heads of the tentacles secrete a ferment which acts upon the proteids and brings them into solution, when they are taken up by the l. Afterwards the tentacles expand once more and recommence the secretion of the sticky fluid. The food thus obtained is of benefit to the pl., though it can live without it. *D.* is able to live in very poor soil. The extra materials obtained are devoted chiefly to seed-production. If the stimulus produced by the capture of an insect be very powerful, the l. itself may bend into a cup form, and this feature is very marked in some sp., the l. bending almost double over the prey.

The fls. of the Brit. sp. rarely open, but self-pollinate in bud.

Droseraceae (EP., BH.). Dicots. (Archichl. Sarraceniales; Rosales BH.). 5 gen., 100 sp., *Drosera* cosmopolitan, the rest more local. Herbs, usu. with perenn. rhiz. and rosettes of l.; *Aldrovanda* a water-plant. All are insectivorous; *Dionaea* and *Aldrovanda* have sensitive l. which shut up when touched, the others catch their prey by sticky tentacles upon the l. (see genera). Fls. usu. in cincinni, rarely in racemes or sol., ♂, reg., 5—4-merous, usu. hypog. K (5); C 5, imbr. or conv.; A usu. 5, pollen in tetrads (cf. Ericaceae); $\underline{G}$ (2, 3, or 5); plac. usu. parietal, rarely axile or free-central; style long; stigmas simple or branched; ov. 3— ∞ , anatr. Loculic. caps.; seed with endosp. and small basal embryo. *Genera*: *Dionaea*, *Aldrovanda*, *Drosophyllum*, *Drosera*, *Roridula*.

Drosophyllum Link. Droseraceae. *D. lusitanicum* Link, Morocco, Portugal, S. Spain. The l. have glands of two kinds—stalked, secreting a sticky fluid (cf. *Drosera*), and sessile, which only secrete when stimulated by nitrogenous matter, and then secrete a digestive ferment. Insects alight on the glands and are entangled; they struggle for a while and finally sink down and die, and are digested by the ferment. The taller glands have no power of movement, but are able to secrete a ferment as well as the sessile ones.

Drudea Griseb. Caryophyllaceae (I. 3). 1 Peru.

Drudeophytum Coulter et Rose (*Arracacia* p.p.). Umb. (III. 4). 5 N. Am.

Drugs are obtained from ∞ pl.: *cf. e.g.* *Abrus*, *Aconitum*, *Aegle*, *Aloe*, *Alpinia*, *Alstonia*, *Anchusa*, *Aralia* (ginseng), *Atropa* (belladonna), *Bamboos*, *Brayera*, *Brucea*, *Canella*, *Cannabis* (hemp), *Capsicum*, *Carica*, *Carum* (caraway), *Cascarilla*, *Cassia* (senna), *Cinchona* (quinine, &c.), *Cinnamomum* (camphor), *Cistus*, *Citrullus* (colocynth), *Citrus*, *Coix*, *Cola*, *Colchicum*, *Colutea*, *Commiphora*, *Convolvulus* (scammony), *Croton*, *Curcuma*, *Datura*, *Digitalis* (digitalin), *Dorema* (gum-ammoniacum), *Dracaena*, *Drimys*, *Elettaria* (cardamom), *Erythroxylon* (cocaine), *Eucalyptus*, *Eugenia*, *Ferula* (asafoetida), *Gentiana*, *Glycyrrhiza* (liquorice), *Guaiacum*, *Ipomoea* (jalap), *Lewisia*, *Lindera*, *Mentha*, *Menyanthes*, *Myroxylon*, *Papaver* (opium), *Peucedanum* (dill), *Picraena*, *Pilocarpus*, *Piper*, *Podophyllum*, *Polygala*, *Pringlea*, *Rhamnus* (cascara), *Rheum* (rhubarb), *Ricinus* (castor-oil), *Ruta* (rue), *Santalina*, *Sassafras*, *Schoenocaulon*, *Smilax* (sarsaparilla), *Strophanthus*, *Strychnos* (strychnine), *Styrax*, *Tamarindus*, *Toluifera*, *Trigonella* (fenugreek), *Uragoga* (ipecacuanha), *Urginea* (squill), *Veratrum*, *Verbascum*, *Zingiber* (ginger), &c. See Dragen-dorff, *Die Heilpflanzen*, Stuttgart, 1898.

Drummondita Harv. (*Philotheca* EP.). Rutaceae (I). Austr.

Drupaceae (Warming) = Rosaceae (sub-order v).

Drupaceous, drupe-like; **drupe**, a fleshy fr. with hard endocarp, within which is the seed, *Cornaceae*, *Juglans*, *Prunus*.

Drupatris Lour. Inc. sed. 1 Cochin-China.

Drusa DC. (*Bowlesia* BH.). Umbelliferae (I. 2). 3 Am., Canaries.

Dry fr., esp. achenes and nuts (indehiscent), follicles, legumes and capsules (dehiscent); and schizocarps; **-ing pl.**, *cf.* Collecting.

Dryadaea L. = *Dryas* L. (Ros.).

Dryadorchis Schlechter. Orchidaceae (II. 20). 2 New Guinea.

Dryandra R. Br. Proteaceae (II). 50 Austr. Like *Banksia*.

Dryas L. Rosaceae (III. 2). 2 arctic. *D. octopetala* L. (alpine in Brit.) is androdioec. in the Alps. Style feathery after fert. (*cf.* *Clematis*, *Geum*).

Drymaria Willd. Caryophyllaceae (I. 3). 30 trop. and S. temp.

Drymocallis Fourr. (*Potentilla* p.p.). Rosac. (III. 2). 20 N. Am.

Drymoda Lindl. Orchidaceae (II. 16). 1 Burma.

Drymoglossum Presl. Polypodiaceae. 10 palaeotrop., Jap., Chi. *D. carnosum* (Wall.) J. Sm. has succulent leaves.

Drymonia Mart. Gesneriaceae (I). 15 trop. Am., W. Ind.

Drymophila R. Br. Liliaceae (VII). 2 E. Austr., Tasm.

Drymophloeus Zipp. Palmaceae (IV. J). 15 Malaya, N. Austr.

Drymotaenium Makino. Polypodiaceae. 2 Japan, Formosa.

Drynaria (Bory) J. Sm. Polypodiaceae. 20 palaeotrop. *D. quercifolia* (L.) J. Sm. has dimorphic l., some projecting, assimilating and spore-bearing, the others small, close to rhiz., collecting humus.

Dryobalanops Gaertn. f. Dipterocarpaceae. 4 Borneo, Sumatra. *D. aromatica* Gaertn. &c. yield Borneo or Sumatra camphor, used chiefly in China. The young l. are red, and hang down.

Dryopetalon A. Gray. Cruciferae (2). 1 Mexico.

Dryopteris Adans. (incl. *Cyclosorus*, *Lastrea*, *Leptogramma*, *Meniscium*, *Nephrodium*, *Phegopteris*). 1000 cosmop. *D. Filix-mas* (L.) Schott

(shield-fern) and others Brit. This sp. has a stout nearly erect rhiz. with large pinnate l. The var. *cristatum* Moore shows apospory.

Dryostachyum J. Sm. Polypodiaceae. 5 Malay Archipelago.

Drypetes Vahl. Euphorbiaceae (A. I. 1). 15 N. Brazil to W.I.

Drypis L. Caryophyllaceae (II. 1). 1 E. Medit.

Duabanga Buch.-Ham. Sonneratiaceae. 2 Indomal.

Dubautia Gaudich. Compositae (5). 6 Hawaiian Is.

Duboisia R. Br. Solanaceae (5). 2 Austr., New Caled.

Duboscia Bocq. Tiliaceae. 1 trop. W. Afr.

Dubouzetia Panch. Elaeocarpaceae. 6 New Caled.

Dubrueilia Gaudich. = *Pilea* Lindl. p.p. (Urtic.).

Duchesnea Smith (*Fragaria* p.p. *BH.*). Rosac. (III. 2). 2 S. As.

Duck's meat, duckweed, *Lemna*.

Ducosia Vieill. ex Guillaumin (*Dubouzetia* p.p.). Elaeo. 1 N. Cal.

Ducrosia Boiss. Umbelliferae (III. 6). 3 W. As.

Dudleya Britton et Rose (*Cotyledon* p.p. *EP.*). Crassul. 60 Calif.

Duffin bean, *Phaseolus lunatus* L.

Dugesia A. Gray. Compositae (5). 1 Mexico.

Dugezia Montr. Inc. sed. 1 New Caledonia.

Duguetia A. St. Hil. (*Aberemoa* Aubl.). Anonaceae (1). 30 trop. S. Am., W.I. *D. quitarensis* Benth. &c. furnish Jamaica and Cuba lancewood. Fr. formed of the individual berries or achenes united to the fleshy recept.

Dulacia Vell. (*Liriosma* *BH.*). Olacaceae. 15 trop. S. Am.

Dulcis (Lat.), sweet.

Dulichium Pers. (*Websteria* Wright). Cyper. (1). 1 Atl. N. Am.

Dumasia DC. Leguminosae (III. 10). 3 trop. As., Afr., Madag.

Dumb-cane, *Dieffenbachia Seguine* Schott.

Dumerilia Lag. ex DC. = *Jungia* L. (Comp.).

Dumoria A. Chevalier. Sapotaceae (1). 1 trop. Afr. Good wood.

Dumose, shrubby.

Dunalia H. B. et K. Solanaceae (2). 8 W. S. Am. to Mexico.

Dunbaria Wight et Arn. Leguminosae (III. 10). 15 trop. As., Austr.

Dune-plants, cf. *Ammophila*, *Carex*, *Elymus*, *Hippophaë*, &c.

Dunnia Tutcher. Rubiaceae (I. 4). 1 China.

Duparquetia Baill. (*Oligostemon* *BH.*). Legumin. (II. 5). 1 W. Afr.

Dupontia R. Br. (*Graphephorum* *BH.*). Gramin. (10). 2 Arctic.

Duramen, the heart-wood.

Durandea Planch. (*Hugonia* *EP.*). Linaceae. 5 New Guinea, Polynes.

Durandia Boeck. Cyperaceae (II). 1 Costa Rica.

Duranta L. Verbenaceae (1). 10 trop. Am., W.I. Cult. orn. shrubs.

Duravia Greene (*Polygonum* p.p.). Polygon. (II. 2). 4 Calif.

Durian, *Durio zibethinus* Murr.

Durieu Boiss. et Reut. = *Daucus* Tourn. p.p. (Umbell.).

Durio Adans. Bombacaceae. 7 Indomal. *D. zibethinus* Murr. produces the durian fr., with delicate flavour and disagreeable smell. Seed with fleshy aril.

Duroia L. f. Rubiaceae (I. 8). 10 S. Am. Myrmecophilous (cf. *Acacia*). *D. petiolaris* Hk. f. and *D. hirsuta* K. Sch. have stems swollen just below the infl. The swollen part is hollow and entrance

is obtained by two longitudinal slits; it is inhabited by ants, which bite through the thin tissue of the slits. *D. saccifera* Benth. et Hk. f. has 'ant-houses' on the l. At the base, on the under side, are two pear-shaped organs formed by outgrowth of the l. The entrance is upon the upper side, protected from rain by a little flap.

- Dusen***ia* O. Hoffm. (*Duseniella* EP.). Compos (12). 1 Patagonia.
Duseniella K. Schum. Compositae (12). 1 Patagonia.
Dussia Krug. et Urb. Leguminosae (III. 1). 1 Martinique.
Dutailleya Baill. Rutaceae (1). 1 New Caled.
Dutch clover, *Trifolium repens* L.; **-grass** (W.I.), *Panicum molle* Sw.; **rushes**, *Equisetum*.
Dutchman's breeches, *Dicentra*; **-pipe**, *Aristolochia*.
Duthiea Hackel. Gramineae (10). 2 Kashmir, Afghanistan.
Duvalia Haw. Asclepiadaceae (II. 3). 15 S. Afr.
Duvaliella Baill. Dipterocarpaceae. 1 Penang.
Duvaljouvea Palla. (*Cyperus* p.p.). Cyperaceae (1). 2 As., Eur.
Duvaua Kunth = *Schinus* L. p.p. (Anacard.).
Duvaucellia Bowditch. Oleaceae. 1 trop. Afr.
Duvernoya E. Mey (*Adhatoda* p.p. BH.). Acanthaceae (IV. B). 25 Afr.
Dwale, *Atropa Belladonna* L.
Dyckia Schult. f. Bromeliaceae (2). 57 S. Am.
Dyera Hook. f. Apocynaceae (I. 3). 3 Malaya.
Dyerophyton O. Ktze. (*Vogella* Lam.). Plumbaginaceae. 3 palaeotrop.
Dyer's greenweed, *Genista tinctoria* L.; **-weld**, *Reseda lutea*, L.
Dyes (vegetable), cf. esp. *Alkanna*, *Baphia* (cam wood), *Bixa* (annatto), *Caesalpinia* (sappan), *Carthamus* (rouge), *Chlorophora* (fustic), *Cladrastis*, *Crocus* (saffron), *Crozophora*, *Curcuma* (turmeric), *Garcinia*, *Haematoxylon* (logwood), *Indigofera* (indigo), *Isatis* (woad), *Lawsonia*, *Maclura* (fustic), *Morinda*, *Nopalea*, *Peganum* (turkey red), *Pterocarpus*, *Reseda*, *Rhamnus*, *Rhus*, *Rubia* (madder).
Dypsidium Baill. (*Dypsis* p.p.) Palmae (IV. 1). 3 Madagascar.
Dypsis Noronha ex Thou. Palmae (IV 1). 10 Madag.
Dyschoriste Nees (*Calophanes* BH.). Acanthaceae (IV. A). 50 trop.
Dysodia Cav. Compositae (6). 35 Am. ✓
Dysodiopsis Rydberg (*Dysodia* p.p.). Compositae (6). 1. S.W. U.S.
Dysolobium Prain. Leguminosae (III. 10). 4 Indomal.
Dysophylla Blume. Labiatae (VI). 20 E. As., Austr.
Dysopsis Baill. Euphorbiaceae (B. II). 1 Andes, Juan Fernandez.
Dysoxylum Blume. Meliaceae (III). 120 Indomal. *D. Fraserianum* Benth. (E. Austr.; Austr. mahogany) and others, good timber.
Dysphania R. Br. Caryophyllaceae (I. 5). 3 Austr. L. alt.
Dyssochroma Miers. Solanaceae (3). 4 trop. Am.
E- (Lat. pref.), without; **-bracteate**, **-calcarate**, **-costate**, **-dentate**, **-glandulose**, **-marginate** (notched), **-rostrate**, **-strophiolate**, **-valvate**, &c. And cf. Ex.
Eagle-wood, *Aquilaria*, *Agallocha* Roxb. (Burma).
Earina Lindl. Orchidaceae (II a. III). 6 N.Z., Polynesia.
Earth-nut, *Arachis hypogaea* L., *Conopodium denudatum* Koch.
East Indian arrowroot, *Curcuma*, *Tacca*; **-hemp**, *Crotalaria juncea* L.; **-rosewood**, *Dalbergia latifolia* Roxb.; **walnut**, *Albizia Lebbek* Benth.
Eastwoodia Brandege. Compositae (3). 1 Lower California.

Eatonella A. Gray. Compositae (6). 2 Nevada, California.

Eatonia Rafin. Gramineae (10). 5. N. Am.

Eau de Créole, *Mammea*.

Ebenaceae (*EP.*, *BH.*). Dicots. (Sympet. Ebenales *EP.*, *BH.*). 5 gen., 320 trop. (esp. Indomal.), trees and shrubs with alt., opp. or whorled, simple, leathery, usu. entire l. Fls. axillary, sol. or in small cymes, reg., usu. dioec., bracteolate, 3—7-merous. (K) persistent; (C) convolute; A epipet. at base of tube, usu. in 2 whorls but frequently ∞ by branching; stds. usu. present in $\frac{2}{3}$ fls., (G) 2—16-loc., with 1—2 anatr. ov. pend. in each loc.; styles 2—8, free or united below. Fr. usu. a berry with fewer seeds than there were ovules, sometimes dehiscent. Embryo straight or slightly curved, in abundant cartilaginous endosp. Many yield valuable wood, e.g. *Diospyros*.

Genera: *Royena*, *Euclea*, *Maba*, *Diospyros*, *Tetracelis*.

Ebenales. The 4th order of Sympetalae (*EP.*), the 6th (*BH.*).

Ebeneous, black as ebony.

Ebenus L. Leguminosae (III. 7). 14 Medit. to Beluchistan.

Ebermaiera Nees (*Staurogyne EP.*). Acanthaceae (I). 40 trop. exc. Afr.

Ebony, wood of many Ebenaceae, esp. *Diospyros*, blackened by a deposition of a gum-resin in the heartwood; Gürke gives a list of forms, *Nat. Pfl.* IV. 1, p. 164; Ceylon and S. Indian ebony, the most important, is from *D. Ebenum* Koen.; **American-, green-, Jamaica-, W. Indian-,** *Brya Ebenus* DC.

Eburopetalum Becc. Anonaceae (4). 1 Borneo.

Eburophyton A. A. Heller (*Chloraea* p.p.). Orch. (II. 2). 1 Calif.

Ecad (Cl.), a habitat form due to origin by adaptation.

Ecastaphyllum P. Br. (*Dalbergia* p.p. *EP.*). Legum. (III. 8). 6 trop. Am., W.I.

Ecballium A. Rich. Cucurbitaceae (3). 1 Medit., *E. Elaterium* A. Rich. (squirting cucumber). The ripe fr. is highly turgid; as it drops from the stalk, a hole is made in its lower end, and through this the contraction of the pericarp squirts the seeds, mixed with a watery fluid. A purgative (elaterium) is prepared from the fr.

Ecbolium Kurz. Acanthaceae (IV. B). 8 trop. Afr.

Ecbolium Riv. ex L. = *Justicia* L. (Acanth.).

Ecclinusa Mart. Sapotaceae (1). 6 N. Brazil.

Eccremocarpus Ruiz et Pav. Bignoniaceae (3). 3 Peru. See fam. The valves of the fr. hang together at the top.

Ecdelocolea F. Muell. Restionaceae. 1 S.W. Austr.

Ecdysanthera Hook. et Arn. Apocynaceae (II. 1). 10 Indomal., China.

Echeandia Ortega. Liliaceae (III). 6 Mexico to Guiana.

Echenais Cass. = *Cnicus* Tourn. p.p. (*BH.*) = *Cirsium* Adans. p.p.

Echetrosis Phil. Compositae (7). 1 temp. S. Am.

Echeveria DC. (*Cotyledon* p.p.). Crassulaceae. 70 Am.

Echidiocarya A. Gray (*Plagiobotrys* p.p. *EP.*). Borag. (IV. 2). 1. Arizona.

Echidnium Schott. Araceae (IV). 2 trop. S. Am.

Echidnopsis Hook. f. Asclepiadaceae (II. 3). 4 E. Afr. Xerophytes with succulent stems.

Echin- (Gr. pref.), spiny.

Echinacanthus Nees. Acanthaceae (IV. A). 8 Himal., Java.

Echinacea Moench. (*Rudbeckia* p.p.). Compositae (5). 2 N. Am.

Echinanthus Cerv. (*Tragus* EP.). Gramineae (3). None described.

Echinaria Desf. Gramineae (10). 1 Medit.

Echinocactus Link et Otto. Cactaceae (III. 1). 250 Texas to Chili. Ribbed cacti (see fam.).

Echinocarpus Blume (*Sloanea* p.p. EP.). Tiliaceae. 6 E. As., Austr.

Echinocephalum Gardn. (*Melanthera* p.p.). Comp. (5). 3 Brazil.

Echinocereus Engelm. (*Cereus* Haw. BH.). Cactaceae (III. 1). 50 Am.

Echinochlaenia Börner. (*Carex* p.p.). Cyper. (III). 3 Tasm., N.Z.

Echinochloa Beauv. = *Panicum* L. p.p. (Gramin.).

Echinocystis Torr. et Gray. Cucurbitaceae (4). 25 Am. Tuberous climbing herbs. *E. lobata* Torr. et Gray often cult. Its tendrils are very sensitive and nutate rapidly; they become straight and erect as they come round towards the main axis, thus avoiding contact.

Echinodorus Rich. Alismaceae. 20 Am., Afr.

Echinolaena Desv. (*Panicum* p.p. EP.). Gramineae (5). 2 S. Am., Madag.

Echinopanax Decne. et Planch. (*Fatsia* BH.). Araliaceae (1). 1 N. Am., Japan, *E. horridus* D. et P., an obstacle to travellers.

Echinopepon Naud. (*Echinocystis* Torr. et Gray). Cucurb. (4). 15 N. Am.

Echinophora Tourn. ex L. Umbelliferae (III. 1). 8 Medit. One cpl. is aborted. The umbel has one ♀ fl. in the centre, surrounded by ♂ fls. The spiny stalks of the latter enclose the fr.

Echinopogon Beauv. Gramineae (8). 1 Austr., N.Z.

Echinops L. Compositae (II). 75 E. Eur., Afr., As. The spherical head is really cpd., formed of ∞ small 1-fl. heads, each with its own invol. The fls. are largely visited by bees.

Echinopsilon Moq. = *Chenolea* Thunb. (BH.) = *Bassia* All. p.p.

Echinopsis Zucc. (*Cereus* p.p.). Cactaceae (III. 1). 25 S. Am.

Echinopterys A. Juss. Malpighiaceae (1, but forming a link between 1 and 2, as it has a flat torus). 1 Mexico. Mericarp spiny.

Echinospermum Sw. (*Lappula* p.p. EP.). Boraginaceae (IV. 2). 50 temp. *E. Lappula* Lehm. cult. The fls. change from white to red and blue (see fam.). Fr. hooked.

Echinostachys Brongn. (*Aechmea* p.p.). Bromel. (4). 6 S. Am. Cult. orn. infl.

Echinothamnus Engl. Passifloraceae. 1 S.W. Afr.

Echiochilon Desf. Boraginaceae (IV. 5). 2 N. Afr., Aden.

Echioglossum Blume (*Cleisostoma* BH.). Orch. (II. 20). 3 Indomal.

Echioides (Tourn.). Desf. = *Nonnea* Medic. (Borag.).

Echiropermum Saldanha da Gama. Leguminosae. Nomen.

Echites P. Br. Apocynaceae (II. 1). 40 Am., W.I.

Echium Tourn. ex L. Boraginaceae (IV. 5). 30 Eur., Medit. *E. vulgare* L. (viper's bugloss) Brit. (offic.). Fl. †, protandr., gynodioec., bee-visited.

Echyropermum Schott. Leguminosae (inc. sed.). Nomen.

Ecklonea Steud. (*Trianoptiles* EP.). Cyperaceae (II). 2 Austr., S. Afr.

Eclipta L. Compositae (5). 4 Austr., S. Am.

Eclopes Gaertn. = *Relhania* L'Hérit. p.p. (Comp.).

Ecology, relations of plants to their environment.

Economic Botany, the study of pl. from the point of view of their uses to man; **-products**, of value in the arts as food, &c., may be divided into groups: (1) gums, resins, rubbers or caoutchoucs, gutta-perchas, &c., (2) oils, (3) dyes and tanning stuffs, (4) fibres, (5) drugs, (6) edible products, (7) timbers, and (8) miscellaneous, such as cork, vegetable ivory, weights, beads, &c. For more detail see under each of these heads, and consult Wiesner, *Die Rohstoffe des Pflanzenreichs*, Vienna, 1903; Watt, *The Commercial Products of India*; De Candolle, *Origin of Cultivated Plants*; *Kew Bulletin* and other technical journals.

Ephymacalyx Pohl. Inc. sed. Nomen.

Epoma K. Schum. Rubiaceae (1. 7). 1 trop. Afr.

Epomanthera Pohl. Inc. sed. Nomen.

Ectadiopsis Benth. Asclepiadaceae (1). 6 trop. and S. Afr.

Ectadium E. Mey. Asclepiadaceae (1). 2 S. Afr.

Ectasis D. Don = *Erica* L. p.p. (Eric.).

Ectinocladus Benth. Apocynaceae (11. 1). 1 W. Afr.

Ectotropic, hyphae running between epidermal cells.

Ectrosia R. Br. Gramineae (10). 4 Austr.

Edaphic, of the soil.

Eddoes (W.I.), *Colocasia antiquorum* Schott.

Edelweiss, *Leontopodium alpinum* Cass.

Edgaria C. B. Clarke. Cucurbitaceae (2). 1 Sikkim.

Edgeworthia Meissn. Thymelaeaceae. 2 Himalaya, China.

Edible products, or foodstuffs in a wide sense, are obtained esp. from stores of reserves in pl., e.g. the seeds of *cereals*, *Avena* (oat), *Coix*, *Eleusine*, *Euchlaena*, *Hordeum* (barley), *Oryza* (rice), *Panicum* (millet), *Paspalum*, *Pennisetum* (bulrush millet), *Secale* (rye), *Setaria*, *Sorghum* (Guinea corn), *Triticum* (wheat), *Zea* (maize), *Zizania*, &c.; the seeds of many *Leguminosae*, e.g. *Arachis* (peanut), *Cajanus* (cowpea), *Cicer* (chickpea), *Dolichos*, *Glycine* (soy), *Lathyrus*, *Lens* (lentil), *Phaseolus* (beans, &c.), *Pisum* (pea), *Psophocarpus*, *Vicia* (bean), *Voandzeia*, &c.; the seeds of *Araucaria*, *Bertholletia* (brazil-nut), *Brosimum*, *Carya*, *Caryocar*, *Castanea* (chestnut), *Castanospermum*, *Cocos* (coconut), *Corylus* (hazelnut, filbert), *Dioon*, *Fagopyrum* (buckwheat), *Juglans* (walnut), *Lecythis*, *Nelumbium*, *Pistacia* (pistachio), *Telfairia*, *Trapa*, &c.; the *underground reserves* of *Allium* (onion, &c.), *Alocasia*, *Araceae*, *Arracacia*, *Arum*, *Beta* (beetroot), *Brassica* (turnip, &c.), *Canna*, *Colocasia* (taro), *Commelina*, *Daucus* (carrot), *Dioscorea* (yam), *Helianthus* (Jerusalem artichoke), *Ipomoea* (sweet potato), *Manihot* (cassava, tapioca), *Maranta* (arrowroot), *Ophiopogon*, *Oxalis*, *Pachyrhizus*, *Peucedanum* (parsnip), *Plectranthus*, *Priva*, *Raphanus*, *Scilla*, *Scorzonera*, *Selinum*, *Stachys*, *Solanum* (potato), *Tragopogon*, *Tropaeolum*, *Ullucus*, *Xanthosoma*, &c.; from *reserves in the stems* of many trees, esp. palms, *Acer* (sugar), *Alsophila*, *Arenga* (sugar), *Borassus* (sugar, sago), *Caryota* (sugar, sago), *Cycas*, *Cocos* (sugar), *Encephalartos*, *Metroxylon* (sago), *Oreodoxa*, *Saccharum* (sugar), &c.; from *reserves in l. and infl.* in

Brassica, Cynara, many palms, &c. Other l. are also eaten, *e.g.* Apium (celery), Ceratopteris, Chenopodium, Crambe (sea-kale), Eremurus, Foeniculum (fennel), Lactuca (lettuce), Lepidium (cress), Myrrhis, Rheum (rhubarb), Scorzonera, Spinacia (spinach), Tetragonia, &c.; similarly the young shoots of Asparagus, Bambusa, &c. This leads on to *condiments* or *spices* (see Condiments).

Many *fleshy fr.* are also eaten; the greatest food value attaches to Artocarpus (bread-fr., jak), Musa (banana, plantain), and Phoenix (date), but others are Aberia, Achras, Anacardium (cashew), Ananas (pine-apple), Anona (custard-apple, &c.), Artabotrys, Averrhoa, Bactris, Benincasa, Blighia, Borassus (palmyra-palm), Byrsonima, Carica (papaw), Celtis, Cereus, Chrysobalanus, Chrysophyllum, Citrullus, Citrus (orange, lemon, &c.), Coccinia, Coccoloba, Cucumis (melon, cucumber), Cucurbita (pumpkin, marrow), Debregeasia, Decaisnea, Dialium, Diospyros (kaki), Durio (durian), Eriobotrya (loquat), Eugenia (rose-apple, &c.), Feronia, Ficus (fig), Fragaria (strawberry), Garcinia (mangosteen), Gaylussacia (huckleberry), Glycosmis, Hymenaea, Juniperus, Lantana, Lapageria, Litchi (litchi), Macadamia, Maclura, Mammea, Mangifera (mango), Mimosa, Monstera, Morus (mulberry), Myrtus, Nephelium (rambutan), Opuntia (pricklypear), Osmanthus, Pappea, Passiflora (granadilla, &c.), Pereskia, Persea (avocado), Peumus, Prunus (plum, cherry, apricot, peach, &c.), Psidium (guava), Punica (pomegranate), Pyrus (pear, apple, &c.), Ribes (gooseberry, currant), Rubus (raspberry, &c.), Sechium, Spondias, Tamarindus (tamarind), Vaccinium (cranberry, bilberry, &c.), Vitellaria, Vitis (grape), Zanthoxylum, Zizyphus, &c.

Drinks (*q.v.*, and Alcohol), narcotics (*q.v.*), &c. may also be mentioned here. For food for animals *cf.* Fodder, and Bee-flowers.

Edithcolea N. E. Br. Asclepiadaceae (II. 3). 2 E. Afr., Socotra.

Edmondia Cogn. Cucurbitaceae (3). 1 Venezuela.

Edraianthus A. DC. = Wahlenbergia Schrad. (*BH.*) = Hedraianthus A. DC.

Edulis (Lat.), edible.

Edwardsia, Salisb. = Sophora Linn.

Edwinia A. A. Heller (*Jamesia* p.p.). Saxifragaceae (III). 2 N. Am.

Eel-grass, *Zostera*; **-trap pl.**, *Biovularia*, *Genlisea*, *Polypompholyx*, *Utricularia*.

Eenia Hiern et Sp. Moore. Compositae (4). 1 Damaraland.

Effete, functionless from age.

Effigurations, outgrowths of receptacle; *Capparidaceae*, *Orchidaceae*, *Passifloraceae*.

Effuse, expanded.

Efulensia C. H. Wright (*Deidamia* EP.). Passifloraceae. 1 trop. Afr.

Eganthus Van Tiegh. Olacaceae. 1 Brazil.

Egassea Pierre ex Wildem. Scytopetalaceae. 3 trop. Afr.

Egeria Neraud. Rubiaceae. Nomen,

Egg-apparatus, the ovum and synergidae; **-fruit**, **-pl.**, *Solanum Melongena* L.

Eggersia Hook. f. (*Neea* p.p. EP.). Nyctaginaceae. 1 W. Indies.

Eglantine, *Rosa Eglanteria* L.

Egletes Cass. Compositae (3). 6 trop. Am., Mexico.

Egyptian bean, lotus, *Nelubium*, *Nymphaea*; -lily, *Richardia*.

Ehretia L. Boraginaceae (II). 40 trop., chiefly [*]. Timber.

Ehrharta Thunb. Gramineae (7). 25 S. Afr., Masc., N.Z. Useful pasture grasses for sandy soil.

Eichhornia Kunth. Pontederiaceae. 5 S. Am., W.I. The sympodium is very complex. Each shoot in turn is pushed to one side by the axillary shoot of its last l. but one; with this shoot it is combined, however, up to the last l. of the axillary shoot. After leaving the axillary shoot, each shoot bears another l., and then ends in the infl., which is enclosed in a spathe, and at first glance appears to spring from the stalk of the last l. In *E. azurea* Kunth. the fls. are dimorphic, in *E. crassipes* Solms trimorphic heterostyled. This last sp. has, when floating freely, large bladder-like swollen petioles, but in soil these are not nearly so large. They cause the plant to float high and it is easily blown about by wind, and has become a very troublesome weed (water hyacinth) in Florida, Java, Australia, &c.

Eichleria Progel. Oxalidaceae. 2 S. Brazil.

Eichlerodendron Briquet (*Xylosma* p.p.). Flacourt. (4). 1 Brazil.

Eicosia Blume. Orchidaceae. Nomen.

Ekebergia Sparrm. Meliaceae (III). 12 S. and trop. Afr., Madag.

Elachanthera F. Muell. Liliaceae (X). 1 Austr.

Elachanthus F. Muell. Compositae (7). 2 temp. Austr.

Elacholoma F. Muell. et Tate. Pedaliaceae. 1 Austr.

Elaeagia Wed. Rubiaceae (I. 3). 2 N. Andes.

Elaeagnaceae (*EP.*, *BH.*). Dicots. (Archichl. Myrtiflorae; Daphnales *BH.*). 3 gen., 25 sp., chiefly on steppes and coasts, *; much branched shrubs, often with leathery l., entire, opp. or alt., and covered, as are all parts, with scaly hairs. There are frequently thorns on the surface (reduced shoots). Infl. racemose; fls. ♀ or unisexual, 2- or 4-merous. In the ♂ the recept. is often flat, but in the ♀ or ? fl. it is tubular as in Thymelaeaceae, and may be fused with the ovary. No petals. Sta. as many, or twice as many, as sepals. G 1 with one erect anatr. ov. Pseudo-drupe. Seed with little or no endosp. *Chief genera*: Hippophaë, Elaeagnus.

Elaeagnus (Tourn.) L. Elaeagnaceae. 20 As., Eur., N. Am. (oleaster). The fr. of some is ed. Cult. orn. shrubs.

Elaeis Jacq. Palmae (IV. 2). 2, one trop. Am., the other, *E. guineensis* Jacq. trop. Afr. (oil-palm) from whose fr. the palm-oil, used for railway axles &c., is obtained by boiling.

Elaeocarpaceae (*EP.*; *Tiliaceae* p.p. *BH.*). Dicots. (Archichl. Malvales). 7 gen., 120 sp. trop. and subtrop., trees and shrubs with alt. or opp., stip. l., and racemes, panicles or dichasia of fls. Disc usu. present. K 4 or 5, free or united, valvate; C 4 or 5, rarely united, often 0, the petals often much divided at the ends, valvate or imbr. but never conv.; A ∞, free, on the disc, which is sometimes developed to an androphore; anthers 2-loc. usu. opening by two pores (sometimes confluent) at the apex; G sessile, with 2—∞ (rarely 1) loc.; ovules in each loc. ∞ or 2, anatr., pend. with ventral raphe; style simple, sometimes lobed at apex. Capsule or drupe; embryo straight, in abundant endosp. *Chief genera*: Elaeocarpus,

Sloanea, Aristotelia. The grounds upon which they are separated from Tiliaceae are chiefly anatomical.

Elaeocarpus Burm. ex L. Elaeocarpaceae. 70 trop.

Elaeodendron Jacq. f. (*Cassine* p.p. *EP.*). Celastraceae. 30 trop. and subtrop. *E. croceum* DC. (saffranhout, S. Afr.) good timber.

Elaeogene Miq. Euphorbiaceae (inc. sed.). 1 Sumatra.

Elaeoluma Baill. (*Myrsine* p.p. *BH.*, *Chrysophyllum* p.p. *EP.*). Sapotaceae (1). 1 Brazil.

Elaeophorbia Stapf. (*Euphorbia* p.p.). Euphorb. (A. II. 8). 1 trop. Afr.

Elaeoselinum Koch ex DC. Umbelliferae (III. 7). 8 W. Medit.

↓ **Elaphoglossum** Schott. Polypodiaceae. 330 trop. and subtrop.

Elaphrium Jacq. = *Bursera* Jacq. (Burs.).

Elater, *Equisetum*.

Elaterioides O. Ktze. (*Elateriospermum* Bl.). Euph. (A. II. 3). 2 Malaya.

Elateriopsis Ernst (*Cyclanthera* *BH.*). Cucurb. (4). 6 S. Am.

Elaterium Jacq. Cucurbitaceae (4). 12 trop. Am. The fr. is explosive like that of *Ecballium*.

Elaterium, *Ecballium*.

Elatinaceae (*EP.*, *BH.*). Dicots. (Archichl. Parietales; Guttiferales *BH.*). 2 gen., 30 sp., trop. and temp. Undershrubs, herbs, or annual water-pl.; the latter are able to live on land, altering their structure to suit the changed conditions (*cf.* *Littorella*). L. opp. or whorled, simple with interpet. stip. Fls. ♀, reg., solitary or in dichasia, 2—6-merous. K hypog., free or united; C imbr.; A in 2 whorls, or inner aborted; $\bar{G}$ syncarpous, multiloc., with simple style; plac. axile; ov. ∞ , anatr. Capsule septifragal; seed straight or curved; endosp. thin or none. *Genera*: *Bergia*, *Elatine*.

Elatine Linn. Elatinaceae. 15 trop. and temp. *E. hexandra* DC. and *E. Hydropiper* L. (water pepper or pipe-wort) in Brit.

Elatineae (*BH.*) = Elatinaceae.

Elatinoides Wettst. (*Linaria* p.p.). Scroph. (II. 3). 24 Eur., As., Afr.

Elatostema Forst. Urticaceae (2). 90 trop. As. *E. acuminatum* Brongn. is apogamous. Some show water secretion from the l.

Elatostematoides C. B. Robinson. Urticaceae (2). 5 Phil. Is.

Elattostachys Radlk. Sapindaceae (1). 10 Indomal., Polynesia.

Elatus (Lat.), tall.

Elcismia Robinson (*Celmisia* p.p.). Compositae (4). 15 S. temp.

Elcomarhiza Barb. Rodr. Asclepiadaceae (inc. sed.). 1 Brazil.

Elder, *Sambucus nigra* L.; **American witch-**, *Fothergilla*; **dwarf-** (W.I.), *Pilea grandis* Wedd.

Elecampane, *Inula Helenium* L.

Elegia L. Restionaceae. 20 S. Afr.

Eleiotis DC. Leguminosae (III. 7). 1 India, Ceylon.

Elemi, balsams, *Burseraceae*, *Commiphora*, *Copaifera*, *Dipterocarpus*, *Liquidambar*, *Pistacia*, *Styrax*, *Toluifera*, etc.

Eleocharis R. Br. Cyperaceae (1). 90 cosmop. *E. palustris* R. Br. (spike-rush) on turfy moors in Brit. The green tissue is centric. The tubers of *E. tuberosus* Schult. (E. As.) are used as food.

Eleogiton Link = *Scirpus* L. p.p. (Cyper.).

- Elephant-apple**, *Feronia Elephantum* Correa; -'s ear, *Begonia*; -'s foot (Am.), *Elephantopus*.
- Elephantella** Rydberg (*Pedicularis* p.p.). Scrophul. (III. 3). 2 N. Am.
- Elephantopus** L. Compositae (I). 20 trop. *E. scaber* L. is an abundant and troublesome weed.
- Elephantorrhiza** Benth. Leguminosae (I. 5). 2 trop. and S. Afr.
- Elettaria** Maton. Zingiberaceae (I). 1 Indomal., *E. Cardamomum* Maton. Fls. on leafless shoots from the rhiz. Cult. in the mountains of Ceylon and S. India (cardamoms). The ripe fr. are picked and dried; the seeds form a strongly flavoured spice, mainly used in India.
- Elettariopsis** Baker. Zingiberaceae (2). 8 Malaya.
- Eleusine** Gaertn. Gramineae (II). 10 trop. and subtrop. *E. coracana* Gaertn. (ragi, kurakkan) is cult. as a cereal in Ceylon, India, Africa, &c., and others are useful fodders.
- Eleutheranthera** Poit. ex Bosc. Compositae (5). 1 trop. Am.
- Eleutheranthus** (*Eleuthranthes*) F. Muell. Rubi. (II. 7). 1 W. Austr.
- Eleutherine** Herb. Iridaceae (II). 3 trop. Am., W.I.
- Eleutherococcus** Maxim. (*Acanthopanax* p.p. EP.). Aral. (I). 2 China.
- Eleutheropetalous**, polypetalous.
- Eleutherospermum** C. Koch (*Pleurospermum* p.p. EP.). Umbel. (III. 4). 2 W. As.
- Eleutherostemon** Herzog. Ericaceae (III. 2). 1 Bolivia.
- Eliaea** Cambess. Guttiferae (II). 1 Madagascar.
- Elichrysum**, cf. *Helichrysum*.
- Elionurus** Humb. et Bonpl. ex Willd. Gramineae (2). 20 trop. and subtrop.
- Elisena** Herb. Amaryllidaceae (I). 3 Peru.
- Elisma** Buchen. Alismaceae. 1 Eur. (in l. Brit.), *E. natans* Buchen.
- Elissarrhena** Miers (*Anomospermum* EP.). Menisperm. 1 Brazil.
- Elizabetha** Schomb. Leguminosae (II. 3). 2 Brit. Guiana.
- Elk-horn fern**, *Platynerium*.
- Elleanthus** Presl. Orchidaceae (II. 7). 50 trop. Am., W. Ind.
- Ellertonia** Wight. Apocynaceae (I. 3). 4 trop. As., Madagascar.
- Elliottia** Muehlb. ex Nutt. Ericaceae (I. 1). 1 S. Atl. U.S.
- Ellipanthus** Hook. f. Connaraceae. 8 Indomal.
- Ellepeia** Hook. f. et Thoms. Anonaceae (I). 10 Malaya.
- Elliptical**, narrowish, tapering equally to both ends.
- Ellisia** L. Hydrophyllaceae. 4 N. Am.
- Ellisiophyllum** Maxim. Hydrophyllaceae. 1 Japan.
- Elm**, *Ulmus campestris* L. &c.; **Spanish-** (W.I.), *Cordia*, *Hamelia*.
- Elmera** Rydberg (*Heuchera* p.p.). Saxifragaceae (I). 1 N. Am.
- Elmeria** Ridl. (*Hornstedtia* Retz.). Zingiberaceae (I). 2 Phil. Is.
- Elodea** Michx. Hydrocharitaceae. 6 Am.; *E. canadensis* Michx. (American water-weed) arrived in Brit. about 1842 and rapidly spread over the inland waters of Eur. Only the ♀ plant is known in Eur., and the spreading is therefore due to veg. repr. chiefly by the breaking off of twigs. Submerged pl., slightly rooted, with whorls of l., in whose axils are the usual squamulae. 3 fl. P 6, A 9; it breaks off as a bud and comes to the surface (cf. *Vallisneria*), where it opens. The ovary of the ♀ fl. grows to such a length as to bring the fl. to the surface, where it is pollinated. P 6, stds. 3, $\bar{G}$ (3); enclosed below in

a 2-leaved spathe. The pl. does not form a true winter bud; the l. are merely a little more closely grouped together.

Elongate, drawn out.

Elsholtzia Willd. Labiatae (VI). 20 As., Eur., Abyss.

Elutheria M. Roem. Meliaceae (II). 2 Peru to Venezuela.

Elvasia DC. Ochnaceae. 5 N. Brazil, Guiana.

Elvira Cass. Compositae (5). 3 trop. Am.

Elymus L. Gramineae (12). 50 N. temp. S. Am. *E. arenarius* L. (lyme grass) on dunes in Brit. (*cf.* *Ammophila*); its l. are coated with wax.

Elyna Schrad. (*Kobresia* Willd. p.p.). Cyper. (III). 5 N. palaeotemp.

Elynanthus Beauv. Cyperaceae (II). 30 *.

Elynanthus Nees = *Tetraria* P. Beauv. (Cyper.).

Elytranthe Blume (*Loranthus* p.p. *BH.*). Loranth. (I). 50 Indomal.

Elytraria Michx. (*Tubiflora* Gmel.). Acanth. (I). 5 trop., subtrop.

Elytropappus Cass. Compositae (4). 6 S. Afr. *E. Rhinocerotis* L. is a char. pl. of the karroo.

Elytrophorus Beauv. Gramineae (10). 2 palaeotrop.

Elytropus Muell.-Arg. Apocynaceae (II. 1). 1 Chili. Many bracts.

Emarginate, notched.

Embelia Burm. f. Myrsinaceae (II). 95 trop. and subtrop., exc. Am.

Emblie myrobalan, *Phyllanthus Emblica* L.

Emblingia F. Muell. Capparidaceae (IV). 1 W. Austr.

Embolanthera Merrill. Hamamelidaceae. 1 Phil. Is.

Embothrium Forst. Proteaceae (II). 5 Andes, Chili, E. Austr.

Embryo, the young pl. contained in the seed; **adventitious**-, *Alchornea*, *Funkia*, *Nothoscordum*.

Embryopteris Gaertn. = *Diospyros* L. (Eben.).

Emeorrhiza Pohl. Rubiaceae (II. 10). 2 S. Am.

Emergences, surface outgrowths arising from other tissues as well as epidermis, *Cactaceae*, *Drosera*, *Rosa*, *Ribes*.

Emerus Tourn. ex Mill. = *Coronilla* L. (Legum.).

Emex Neck. Polygonaceae (I. 2). 1 Medit., S. Afr., Austr. — The fr. is surrounded by the P, 3 of whose l. are spiny.

Emicocarpus K. Schum. et Schlechter. Asclep. (II. 1). 1 S.E. Afr.

Emilia Cass. (*Senecio* Tourn. p.p. *EP.*). Compositae (8). 5 palaeotrop.

Emiliomarcelia Th. et H. Durand (*Trichoscypha* p.p.). Anacardiaceae (3). 4 Congo.

Eminia Taub. (*Rhynchosia* p.p. *BH.*). Leguminosae (III. 10). 2 E. trop. Afr.

Eminium Schott. Araceae (VII). 5 W. As.

Emmenanthe Benth. Hydrophyllaceae. 6 N.W. N. Am.

Emmenopteryx Oliv. Rubiaceae (I. 5). 1 China.

Emmenosperma F. Muell. Rhamnaceae. 2 Austr.

Emmeorrhiza Pohl. Rubiaceae (II. 10). 2 trop. S. Am.

Emmer, *Triticum dicoccum* Schrank.

Emmotum Desv. Icacinaceae. 5 Brazil.

Emorya Torr. Loganiaceae. 1 Texas.

Empedoclea A. St. Hil. (*Tetracera* p.p. *EP.*). Dilleniaceae. 1 Brazil.

Empetraceae (*EP.*, *BH.*). Dicot. (Archichl. Sapindales; anomalous

- Monochlamydeae *BH.*). 3 gen., 4 sp., * and Andes, occupying similar positions to Ericaceae; heath-like habit. The l. are incurved backwards, forming a cavity on the under side partly filled up by hairs into which the stomata open. Infl. racemose, usu. dioec. In all but *Corema* the fls. are on 'short shoots' which arise lat. from the main axis and bear only scales below the infl. K 3, C 3, A 3, $\underline{G}$ (2—9). Loculi=cpls.; ovules 1 in each, anatr. or nearly campylotr., erect on axile plac., with ventral raphe. Drupe with 2—9 stones; seed albuminous with no caruncle. *Genera*: *Corema*, *Empetrum*, *Ceratiola*.
- Empetrum** (Tourn.) L. Empetraceae. 1, *E. nigrum* L. (crow-berry), on moors, N. temp. (incl. Brit.) and Andes. For habit, fl., &c. see fam. The fl. is dioec. and anemoph., but is sometimes ♂ and protandrous.
- Emplectanthus** N. E. Br. Asclepiadaceae (II. 3). 2 S. Afr.
- Emplectocladus** Torr. (*Prunus* p.p. *EP.*). Rosaceae (v). 1 N.W. Am.
- Empleuridium** Sond. et Harv. Rutaceae (I). 1 S. Afr.
- Empleurum** Ait. Rutaceae (I). 1 S. Afr. L. officinal (buchu).
- Empogona** Hook. f. Rubiaceae (I. 8). 2 E. trop. and S. Afr.
- Enallagma** Baill. Bignoniaceae (4). 4 C. Am., W.I.
- Enalus** L. C. Rich. Hydrochar. 1 Indian and Pac. Oceans. See *Enhalus*.
- Enantia** Oliv. Anonaceae (4). 3 W. Afr.
- Enantioblastae** (Warming). The 4th cohort of Monocotyledons.
- Enantiophylla** Coulter et Rose. Umbelliferae (III. 6). 1 Guatemala.
- Enantiostyly**, *Cassia* (q.v.), *Khugia*, *Leguminosae*, *Marantaceae*, *Saintpaulia*.
- Enargea** Banks (*Luzuriaga* Ruiz et Pav.). Lili. (x). 3 S. Am., N.Z.
- Enarthrocarpus** Labill. Cruciferae (2). 7 E. Medit., N. Afr.
- Encelia** Adans. Compositae (5). 40 W. U.S. to Chili.
- Enceliopsis** A. Nelson (*Encelia* p.p.). Compositae (5). 5 N. Am.
- Encephalartos** Lehm. Cycadaceae. 5 Afr. The Kaffirs prepare a meal from the pith (*cf.* *Cycas*).
- Encephalosphaera** Lindau. Acanthaceae (IV. B). 1 Colombia.
- Enchanter's Nightshade**, *Circaea*.
- Encholirium** Mart. (*Dyckia* *BH.*). Bromeliaceae (2). 6 Brazil.
- Enchosanthera** King et Stapf (*Anplectrium* p.p.). Melastomaceae (1). 1 Indo-China.
- Enchylaena** R. Br. Chenopodiaceae (A). 1 Austr.
- Enchysia** Presl = *Laurentia* Neck. (Campan.).
- Enckea** Kunth = *Piper* L. p.p. (*Piper*).
- Encopa** Griseb. Scrophulariaceae (II. 6). 1 Cuba.
- Encyclia** Hook. = *Epidendrum* L. (Orchid.).
- Endacanthus** Baill. Icacinaceae. 1 Madagascar.
- Endemic**, confined to a small section of country, island, &c.
- Endiandra** R. Br. Lauraceae (II). 20 Indomal., Austr., Polynesia.
- Endive**, *Cichorium Endivia* L.
- Endlicheria** Nees (*Ayendron* *BH.* *Aniba* *EP.*). Laur. (II). 3 trop. Am.
- Endo-** (Gr. pref.), within; **-carp**, the innermost layer of fr. in a drupe, &c.; **-chylous**, with internal water-storing tissue; **-gamy**, fusion of ? gametes; **-genous**, arising from internal tissues; **-gens**, Monocotyledons; **-parasite**, pl. living within the tissues of the host;

-phytic, living within another; -pleura, inner seed coat, *Cycadaceae*.
 -rhizal, monocotyledonous; -sperm, the nutrient tissue outside
 embryo in seed, fleshy in *Berberis*, &c., bony in *Phoenix*, *Phytelephas*,
 horny in *Coffea*, &c., mealy in *Frankeniaceae*, ruminant in *Anonaceae*,
 and cf. *Gymnospermae*; -tropic, with hyphae entering the cells.

Endocellion Turcz. ex Herd. Compositae (inc. sed.). 1 Russia.

Endodesmia Benth. Guttiferae (III). 1 W. trop. Afr.

Endolithodes Bartl. = Synisoon Baill. (Rubiaceae).

Endomallus Gagnep. Leguminosae (III. 10). 1 Cochin-China.

Endonema A. Juss. Penaeaceae. 2 S. Afr.

Endopogon Nees = Strobilanthes Blume p.p. (Acanth.).

Endopogon Rafin. Rubiaceae (inc. sed.). 1 N. Am.

Endorima Rafin. (*Baldwinia* Nutt.). Compositae (5). 3 N. Am.

Endosiphon T. Anders. ex Benth. et Hook. f. Acanth. (IV A). 1 trop. Afr.

Endospermum Benth. Euphorbiaceae (A. II. 6). 5 Malaya, China.

Endosteira Turcz. Tiliaceae. 1 St Vincent.

Endostemon N.E. Br. (*Ocimum* p.p.). Labiatae (VII). 1 S. and trop. Afr.

Endressia J. Gay (*Ligusticum* p.p. *BH.*). Umbellif. (III. 5). 1 Pyrenees.

Endusa Miers. Olacaceae. 2 Peru.

Enetophyton Nieuwland (*Utricularia* p.p.). Lentibular. 1 U.S.

Engelhardtia Leschen. Juglandaceae. 10 Indomal., China.

Engelmannia Torr. et Gray. Compositae (5). 1 S.W. U.S., Mex.

Englerastrum Briquet. Labiatae (VII). 2 trop. Afr.

Englerella Pierre. Sapotaceae (inc. sed.). 1 French Guiana.

Engleria O. Hoffm. Compositae (3). 2 W. trop. Afr.

Englerocharis Muschler. Cruciferae (4). 2 Peru.

Englerodaphne Gilg. Thymelaeaceae. 1 E. Afr.

Englerodendron Harms. Leguminosae (II. 3). 1 E. trop. Afr.

Englerodoxa Hörold. Ericaceae (III. 2). 1 Ecuador.

Englerophytum Krause. Sapotaceae (1). 1 Cameroons.

Englypha Chod. et Hassler. Aristolochiaceae. 1 Paraguay.

Engram, record produced on the organism. *New Phyt.* v. 200.

Enhalus Rich. Hydr. charitaceae. 1 Indomal., in salt water. The
 ♀ fls. float horiz. at low water, and catch the ♂ fls. which (cf. *Vallis-*
neria) break off and float. As the tide rises, the ♀ fls. stand vertically
 and the pollen, heavier than water, sinks down upon the stigmas.
 The testa bursts when the seed is ripe, and the embryo is freed.

Enhydra (*Enydra*) Lour. Compositae (5). 9 trop. and subtrop.

Enhydrias Ridl. Hydrocharitaceae. 1 Malaya.

Enicosanthum Becc. Anonaceae (1). 1 Borneo.

Enicostema Blume. Gentianaceae (1). 1 trop. Xero. and coast.

Enkianthus (*Enkyanthus*) Lour. Ericaceae (II. 1). 10 Himal. to Japan.

Enkleia Griff. (*Linostoma* Wall.). Thymel. 1 Further India.

Ennealophus N.E. Br. Iridaceae (II). 1 Amazon valley.

Enneapogon Desv. ex Beauv. = Pappophorum Schreb. p.p. (Gram.).

Enomegra Aven Nelson (*Argemone* p.p.). Papav. (II). 2 Rockies.

• **Ensate, ensiform**, sword-shaped.

Enslenia Nutt. Asclepiadaceae (II. 1). 3 N. U.S. to Colombia.

Entada Adans. (*Pusaetha* L.). Leguminosae (I. 5). 12 trop. The seeds of *E. scandens* Benth. (nicker beans), a common trop. climber, are carried to Eur. by the Gulf Stream.

Entandrophragma C. DC. Meliaceae (II). 6 Angola.

Entelia R. Br. Tiliaceae. 1 N. Z. Wood very light.

Enterolobium Mart. Leguminosae (I. 1). 5 trop. Am., W.I.

Enteropogon Nees. Gramineae (II). 4 trop. Afr. and As.

Enterosora Baker. Polypodiaceae. 1 Centr. Am., Jamaica.

Enterospermum Hiern. Rubiaceae (I. 8). 1 E. Afr. coast.

Enthomanthus Moç. et Sesse ex Ramirez. Caprifol. 2 Mexico.

Entire, without marginal notches.

Entomophily (fl.), insect-pollination; Müller has divided fl. into 8 fl.-classes (q.v.) according to their degrees of specialisation in regard to the visits of insects.

Entoplocamia Stapf. Gramineae (II). 2 S. and trop. Afr.

Entrecasteauxia Montr. Inc. sed. 1 New Caledonia.

Enydra (*Enhydra*) Lour. Compositae (5). 9 trop. and subtrop.

Enzyme, an unorganised or soluble ferment.

Eomecon Hance. Papaveraceae (II). 2 China.

Epacridaceae (*EP.*; *Epacrideae* *BH.*). Dicotyledons (Sympet. Ericales *EP.*, *BH.*). 21 gen., 350 sp., chiefly Austr. and Tasm., where they repres. the Ericaceae of other continents, but extending also to India, N.Z., Hawaii, and S. Am. They resemble Ericaceae (§ IV) closely in habit and appearance, being mostly small shrubs (a few small trees), the stems growing $\pm$ obliquely, sparingly branched, with narrow, entire, rigid l., usu. alt., rarely opp. or whorled. Sometimes the l. are sheathing, in which cases either no scar is left on the stem when the l. falls, or a ring mark is left, as in *Dracophyllum*.

Fls. usu. in term. racemes or spikes. $\varnothing$, actinom. K 5, C (5), A 5, hypog. at edge of disc, or more often epipet.; the anthers opening by one central longitudinal slit and without horns or other appendages; pollen simple or in tetrads; $\underline{G}$ (5) cpls. opp. petals, plac. axile; ov. in each loc. 1— ∞ , anatr., usu. pend.; style simple, sometimes in depression of top of ovary, with a capitate stigma. Capsule or stony drupe. Embryo straight, in copious endosp.

Classification and chief genera (after Drude):

Each loc. with several seeds; caps. loculic.

1. *Prionoteae* (sta. hypog., free; anther-loc. divided): *Priornotes*, *Lebetanthus* (only gen.).

2. *Epacrideae* (sta. usu. epipet.; anther-loc. without separation after dehiscence): *Sprengelia*, *Richea*, *Dracophyllum*, *Sphenotoma*, *Epacris*.

Each loc. with 1 seed: fr. indehiscent.

3. *Styphelieae*: *Styphelia*, *Acrotriche*, *Pentachondra*.

Epacrideae (*BH.*) = **Epacridaceae**.

Epacris Forst. Epacridaceae (2). 40 S.E. Austr., Tasm., N.Z., New Caled. Cult. orn. fls.

Epactium Willd. Inc. sed. 1 Peru.

Epallage DC. Compositae (5). 5 Madagascar.

Epaltes Cass. Compositae (4). 12 trop.

Epatitis Rafin. Compositae (inc. sed.). 1 Oregon.

- Eperua** Aubl. Leguminosae (II. 3). 6 N. Braz., Guiana. *E. purpurea* Benth., a showy tree of the caatingas. *E. falcata* Aubl. (wallaba, Br. Guiana) yields a good timber.
- Ephebepogon** Nees et Meyen (*Pollinia* p.p. *EP.*). Gram. (2). 1 China.
- Ephedra** Tourn. ex L. Gnetaceae. 25 warm temp. Shrubs, much branched, with opp. connate l. reduced to scales, so that the stem performs the work of assim. Fls. diclinous, with no trace of cpls. in ♂, or of sta. in ♀; ♂ in spikes, ♀ in pairs or solitary, usu. bracteate. The ♂ has a P of 2 antero-post. united l., beyond which the axis is prolonged and bears 2—8 sessile 2-loc. anthers. The ♀ has a tubular P and one erect orthotr. ovule with a long micropyle projecting at the top of the fl.; the fl. or fls. are enclosed by bracts which become red and fleshy after fert. and enclose the fr. The seed is enclosed in the P, which becomes woody, and the fleshy bracts cover this again. There are two cots. in the embryo; seed album.
- Ephedranthus** Sp. Moore (*Guatteria EP.*). Anonaceae (1). 1 Brazil.
- Ephemeral**, lasting a day; fruiting two or three times a season.
- Ehippiandra** Decne. Monimiaceae. 1 Madagascar.
- Ehippianthus** Rchb. f. (*Liparis* p.p. *BH.*). Orchid. (II. 4). 1 Saghalien.
- Epi-** (Gr. pref.), upon; **-basal**, in front of basal wall; **-calyx**, an extra calyx of apparent stip. nature, *Bombacaceae*, *Dipsacaceae*, *Fragaria*, *Lythraceae*, *Malvaceae*, *Potentilla*, *Rhodotypos*, *Rosaceae*; **-carp**, the outer layer of a fleshy fr.; **-chil**, end of labellum of orchid, when distinct from base; **-cotyl**, stem of seedling above cotyledons; **-dermis**, outer skin of plant; **-geal** (germination), with cotyledons above ground; **-gyny** (**-gynous**), fl. when ovary is immersed in hollow receptacle, and other organs are epigynous, *Begoniaceae*, *Compositae*, *Iridaceae*, *Rubiaceae*, *Umbelliferae*, &c.; **-petalous** (sta.), inserted upon petal, *Labiatae*, &c.; **-phyllous** (infl.), *Chaillertia*, *Chirita*, *Erythrochiton*; (sta.), inserted upon perianth, *Proteaceae*, &c.; **-physis**, a protuberance round the hilum of a seed; **-phytes**, see separate article below; **-sepalous**, inserted upon a sepal; **-sperm**, outer coat of seed; **-spore**, *Marsiliaceae*, *Salviniaceae*; **-tropous** (ovule), with raphe towards axis.
- Epiblastus** Schlechter (*Dendrobium* p.p.). Orchid. (II. 15). 2 Austr., N.G.
- Epiblema** R. Br. Orchidaceae (II. 2). S.W. Austr.
- Epicampes** J. et C. Presl. Gramineae (8). 15 Calif. to Argentina.
- Epicattleya** × Rolfe. Orchid. Hybrid Epidendrum—Cattleya.
- Epicharis** Blume (*Dysoxylum* p.p. *EP.*). Meliaceae (III). 4 E. As.
- Epicladium** Small (*Epidendrum* p.p.). Orchid. (II. 6). 1 Florida.
- Epiclastopelma** Lindau. Acanthaceae (IV. A). 1 E. Afr.
- Epicranthes** Blume (*Bulbophyllum* p.p. *BH.*). Orchid. (II. 16). 2 Malaya.
- Epidendrum** L. Orchidaceae (II. 6). 400 trop. Am. Labellum often ± united to column; a canal runs from the junction down into the ovary. Cult. orn. fl.
- Epidiacrum** × Rolfe. Orchid. Hybrid of last with Diacrium.
- Epifagus** Nutt. (*Epiphegus EP.*). Orobanchaceae. 1 N. Am.
- Epigaea** L. Ericaceae (II). 2 sp., *E. asiatica* Maxim. Japan, *E.*

repens L., the (trailing arbutus, mayflower) atl. U.S. Fls. tetramorphic (Darwin, *Forms of Flrs.* p. 297).

Epigynae (B.H.). The 2nd series of Monocotyledons.

Epigynium Klotzsch = *Vaccinium* L. p.p. (Eric.).

Epigynum Wight. Apocynaceae (II. 1). 8 Indomal.

Epilaelia × Rolfe. Orchid. Hybrid *Epidendrum*—*Laelia*.

Epilasia Benth. et Hook. f. (*Scorzonera* p.p. B.H.). Compositae (13). 5 Centr. and W. As.

Epilobiaceae, Onagraceae.

Epilobium Dill. ex L. Onagraceae (2). 160 temp. and arctic; 9 in Brit. (willow-herbs). Fl. reg., but in some slightly ♂ by the bending of sta. and style, which project and make a landing-place for insects. Of Brit. sp. several may be noticed, as the fls. form a series in regard to cross-pollination, &c. In *E. angustifolium* L. the fls. are large and autogamy almost impossible. Honey is secreted by the upper surface of the ovary. The sta. are ripe when the fl. opens, and project horiz., while the style, with its stigmas closed, is bent downwards. Afterwards the sta. bend down and the style up, and the stigmas open. This is the plant in which C. K. Sprengel (1793, see biography in *Nat. Science*, 1893) made the first discovery of dichogamy. In *E. hirsutum* L. sta. and stigma are ripe together, but the stigma projects beyond the sta.; if not pollinated it bends back and touches the anthers. *E. parviflorum* Schreb. is a small-flowered homogamous sp. rarely visited by insects; 4 sta. are shorter, 4 longer, than the style; the former are useful for cross-pollination, the latter for self. The seed has a tuft of hairs aiding wind-carriage.

Epiluma Baill. (*Chrysophyllum* p.p.). Sapotaceae (1). 1 New Caled.

Epimatium, ovuliferous scale (Coniferae).

Epimedium (Tourn.) L. (incl. *Vancouveria* C. Morr. et Dcne.). Berberidaceae. 10 N. temp. *E. alpinum* L. nat. in Brit. It has, like most E., a 2-merous fl., which is pend., with glandular hairs on the stalk. It is protog., and after a time the valves of the anthers bend upwards and roof over the stigma and the ♂ stage begins. Finally self-pollination occurs by the elongation of the style carrying the stigma among the valves. The nectaries are of a curious shoe-like pattern. The seeds have a membranous aril.

Epinetrum Hiern. Menispermaceae. 1 trop. Afr.

Epipactis Adans. Orchidaceae (II. 2). 10 N. temp.; 2 Brit., *E. latifolia* All., and *E. palustris* Crantz (helleborine). There are two stds. at the sides of the column; the anther is acrotonic. The labellum has a hinged term. portion, which by its rebound causes the insect to fly somewhat upwards in leaving the flr. In so doing it rubs the rostellum, which instantly becomes very viscid and cements the pollinia (which have no true caudicles) to the insect. The chief visitors are wasps. See Darwin's *Orchids*, p. 93.

Epipetrum Phil. (*Dioscorea* p.p. B.H.). Dioscoreaceae. 3 Chili.

Epiphegus Spreng. Orobanchaceae. 1 N. Am.

Epiphora Lindl. (*Polystachya* B.H.). Orchidaceae (II. 5). 1 S. Afr.

Epiphronitis × Veitch. Orchid. Hybrid, *Epidendrum*—*Sophronitis*.

Epiphyllanthus Berger (*Cereus* p.p.). Cact. (III. 1). 1 Brazil.

Epiphyllum Haw. Cactaceae (III. 1). 1 Brazil, often cult.

Epiphyte, a plant which clings to another for support, but is not parasitic, and is not usu. attached to the soil. Abundant in the wetter trop., esp. S. Am. The group is made up of pl. which possess in common 3 general adaptations: (1) a good seed-dispersal mechanism for wind or birds, (2) a capacity to attach themselves at once to the support on germination, usu. by clasping roots, and (3) fairly well-marked xero. chars. to enable them to stand the droughts to which their situation renders them esp. liable; *Aeschynanthus*, *Araceae*, *Bromeliaceae*, *Bulbophyllum*, *Clusia*, *Columnea*, *Dischidia*, *Filices*, e.g. *Asplenium*, *Platycerium*, *Polypodium*, &c., *Ficus*, *Hydnophytum*, *Marcgravia*, *Myrmecodia*, *Oncidium*, *Orchidaceae*, *Phalaenopsis*, *Phyllocactus*, *Piper*, *Rhipsalis*, *Rhododendron*, *Scuticaria*, *Tillandsia*, *Vanilla*, &c. See Schimper, *Die epiph. Vegetation Amerikas*, Jena, 1888, and *Plant Geography*; Goebel, *Pflanzenbiol. Schilderungen*.

Epipogon S. G. Gmel. Orchidaceae (II. 2). 1 Eur. (incl. Brit.), As., *E. aphyllum* Sw. a leafless saprophyte with branched rhiz. and no r.; endotropic mycorrhiza. Fl. as in *Epipactis*, but without twisting of the recept.

Epipremnopsis Engl. Araceae (I). 1 Indomal.

Epipremnum Schott. Araceae (II). 15 Indomal.

Epiprinus Griff. Euphorbiaceae (A. II. 2). 1 Further India.

Epirrhizanthus Blume = *Salomonina* Lour. p.p. (Polygal.).

Episcia Mart. Gesneriaceae (I). 30 trop. Am., W.I.

Epistephium Kunth. Orchidaceae (II. 2). 7 trop. S. Am.

Epistylum Sw. = *Phyllanthus* L. p.p. (Euph.).

Epitaberna K. Schum. Rubiaceae (I. 8). Cameroons.

Epithema Blume. Gesneriaceae (I). 10 Indomal., trop. Afr.

Epithymum Lunell (*Cuscuta* p.p.). Convolv. (II) 5 W. U.S.

Epitrachys C. Koch = *Cnicus* L. (BH.) = *Cirsium* Tourn. (Comp.).

Equisetaceae. Pteridophyta (Equisetineae). An order with one surviving genus (*Equisetum* *q.v.*), formerly well repres. Many large fossils.

Equisetales (*Equisetineae*). A main division of Pteridophyta (*q.v.*), containing the single living fam. Equisetaceae.

Equisetum L. Equisetaceae (only genus). 25 cosmop.; 9 in Brit. (horsetails), chiefly in swampy places. Perenn. herbs with sympodial rhiz. which send up aerial shoots each year, of one or two kinds; in some sp. the ordinary green shoot bears the repr. spike at the end, while in the others there is a special repr. shoot, usu. appearing early in the year, and often without chlorophyll, the ordinary shoots performing assim. work only. The stem is very distinctly jointed, and at the nodes are borne whorls of united l. closely pressed against the stem, and of little or no use in assim. The branches emerge through the leaf-sheath and thus appear at first sight endogenous; in reality they are exogenous, but formed so much later than the l. that their points of origin are already covered by the leaf-sheath, and so they are compelled to burrow through it. Stages in this process may easily be observed. The surface of the stem is grooved; the ridges are occupied by mechanical tissue, whilst the green tissue and stomata are at the base of the furrows. This is a marked xero. structure and is repeated very closely in *Casuarina*. In several sp. the internodes

of the rhiz. are swollen into tubers, which serve for hibernation and veg. repr.

The spike is very like the ♂ fl. of a Conifer, and has as much right to the title of flower. It is an axis with short internodes, bearing a dense mass of sporophylls. Each is shield-shaped and bears a number of sporangia upon the under side of the head (*i.e.* towards the stem), arranged like the horses of a 'merry-go-round.' The spores are of one kind only; each has, running round it, two spiral cuticularised bands of membrane, formed from the outer wall and termed *elaters*. These are hygroscopic, unfolding in damp air. In the rolling up again on drying, the elaters of one spore become entangled with those of others and cause them to adhere together, so that several prothalli may be formed near to one another when they germinate. This is advantageous, for the prothalli are dioec., though so far as we can tell the spores are all alike. The prothallus is fairly large, the ♂ being smaller than the ♀.

The stems of *E. hyemale* L. (Dutch rushes) are used for polishing, the mechanical tissues contain much silica, as do those of most.

Equitant (vernation), *cf.* Vernation.

Eragrostis Host. Gramineae (10). 150 cosmop., mostly subtrop.

Eranthemum L. (excl. *Pseuderanthemum* Radlkf.). Acanthaceae (IV. A). 25 trop. As.

Eranthis Salisb. Ranunculaceae (2). 7 N. palaeotemp. *E. hyemalis* Salisb. (winter aconite, nat. in Brit.) has a thick rhizome or row of tubers, one formed each year. The sol. term. fls. appear in February, before the l.; each has an invol. of three green l., a 'calyx' of 6 segments, and several honey-l. or petals.

Erasma R. Bruniaceae. Nomen.

Ercilla A. Juss. Phytolaccaceae. 2 Chili, Peru. *E. volubilis* A. Juss., climbs by adhesive discs, endogenous just above the axils.

Erechtites Rafin. Compositae (8). 15 Am., Austr., N.Z.

Erect (ovule), erect with stalk at base (fl. held erect).

Eremaea Lindl. Myrtaceae (II. 2). 6 W. Austr.

Eremaeopsis O. Ktze. = *Eremaea* Lindl. (Myrt.).

Eremalche Greene (*Malvastrum* p.p.). Malvaceae (2). 3 W. U.S.

Eremanthus Less. Compositae (1). 20 Brazil.

Eremia D. Don. Ericaceae (IV. 2). 30 S. Afr.

Eremiastrum A. Gray. Compositae (3). 2 Calif., Arizona.

Eremiopsis N.E. Br. Ericaceae (IV. 2). 1 S. Afr.

Eremium (Cl.), a desert formation.

Eremobium Boiss. (*Malcolmia* BH.). Cruciferae (4). 3 N. Afr.

Eremocarpus Benth. Euphorbiaceae (A. II. 1). 2 Pac. N. Am.

Eremocarya Greene. Boraginaceae (IV. 2). 3 Pac. N. Am.

Eremochlaena Baill. Chlaenaceae. 1 S. Madagascar.

Eremochloa Buese. Gramineae (2). 6 SE. As.

Eremochloe S. Wats. Gramineae (10). 2 W. N. Am.

Eremocitrus Swingle (*Triphasia* p.p.) Rutaceae (V). 1 N. Austr.

Eremocrinum M. S. Jones. Liliaceae (III). 1 California.

Eremogone Fenzl. = *Arenaria* L. p.p. (Carophyll.).

Eremolaena Baill., *cf.* *Eremochlaena*.

Eremolepis Griseb. Loranthaceae (II). 5 trop. A., W.I.

- Eremolithia** Jepson. Caryophyllaceae (I. 6). 1 California.
Eremoluma Baill. (*Lucuma* p.p. *EP.*). Sapotaceae (I. 6). 1 Guiana.
Eremomastax Lindau (*Paulowilhelmia* *BH.*). Acanth. (IV. A). 1 W. Afr.
Eremopanax Baill. Araliaceae (I). 3 New Caledonia.
Eremophila R. Br. (*Pholidia* *EP.*). Myoporaceae. 30 Austr.
Eremophyton Beguinot. Cruciferae (2). 1 N. Afr.
Eremosia Gleason (*Vernonia* p.p.). Compositae (I). 15 Mex., C. Am.
Eremosparton Fisch. et Mey. Leguminosae (III. 6). 1 W. and C. As.
Eremospatha G. Mann et H. Wendl. Palmaceae (III. 2). 5 trop. Afr.
Eremostachys Bunge. Labiatae (VI). 40 mid. and W. As.
Eremosyne Endl. Saxifragaceae (I). 1 S.W. Austr.
Eremothamnus O. Hoffm. Compositae (8). 1 S. Afr.
Eremurus Bieb. Liliaceae (III). 20 alpine W. and Cent. As. Fl.

protog.; the petals crumple up before the essential organs are ripe.

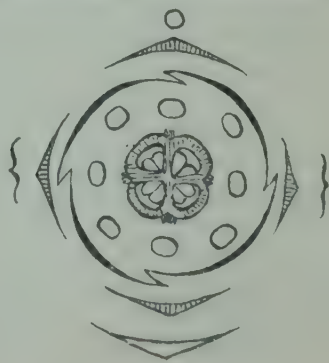
The l. of *E. aurantiacus* Baker are eaten in Afghanistan.

- Eria** Lindl. Orchidaceae (II. 15). 240 trop. As. Epiphytes; cult.
Eriachaenium Sch.-Bip. Compositae (9). 1 Tierra del Fuego.
Eriachne R. Br. Gramineae (9). 25 trop. As., Austr.
Eriadenia Miers. Apocynaceae (II. 1). 1 trop. S. Am.
Eriander H. Winkler. Rutaceae (IV). 1 trop. Afr.
Eriandrostachys Baill. Sapindaceae (I). 1 Madagascar.
Erianthus Michx. Gramineae (2). 25 trop. *E. Ravennae* Beauv. orn.
Eriastrum Wooton et Standley (*Gilia* p.p.). Polemon. 2 New Mexico.
Eriaxis Rchb. f. (*Galeola* *BH.*). Orchidaceae (II. 2). 1 New Caledonia.
Eribroma Pierre (*Sterculia* p.p. *EP.*). Sterculiaceae. 1 trop. Afr.
Erica (Tourn.) L. Ericaceae (IV). 500 Eur. (esp. Medit.) and S. Afr.
 (see fam.). 5 in Brit.; the two common heaths, *E. cinerea* L. and *E. Tetralix* L., cover great areas of moor. In habit like *Calluna*. Fl. bell-shaped and pendulous, visited and fert. mainly by bees. Honey is secreted by the disc, and insects hanging on to the fl. and probing for it must shake the sta. and receive a shower of the loose powdery pollen from the pores in the tips of the anthers. In the wider mouthed sp. the anthers have horn-like projections at the back, which ensure contact with the insect's proboscis. The stigma projects beyond the sta. so as to be touched first.

Many S. Afr. sp. cult. *E. scoparia* L. is the heath of S. France, &c. (*bruyère*), several feet high; its rootstocks furnish 'briar' wood pipes. The roots of heaths possess endotropic mycorrhiza.

Ericaceae (*EP.*, *BH.* excl. *Vacciniaceae*, incl. *Pyrolaceae* p.p., *Clethraceae*. Dicots. (Sympet. Ericales *EP.*, *BH.*).

50 gen., 1350 sp. Owing to their numbers and their social habit they form very char. parts of the veg. in many portions of the globe. Cosmop. except in deserts and in hot damp trop. regions. The *Ericoideae* are confined to Africa, Medit. and Europe, the two great masses of them being however separated by the Sahara, though sp. of *Erica*, &c. occur in each (see Drude in *Nat. Pfl.* or *Pflanzengeog.* for full discussion of the



interesting distr. of E. See also gen., esp. *Rhododendron*, *Vaccinium*, *Calluna*, *Erica*).

The distr. of E. on arctic moors and swamps and on dry moors in warmer regions (almost all grow in peaty soil) would lead us to expect, and we find, esp. in *Ericoideae*, xero. char. Woody plants from small undershrubs to large shrubs or even trees. Two types of habit—that of *Ericoideae* and that of the remaining tribes. In the latter there are usu. true winter-buds formed (e.g. *Rhododendron*), even though the l. may last over the winter. The bud is covered with scale-l., and when its elongation occurs these drop off and a gap is left on the stem; the foliage l. tend to form rosettes at the ends of the twigs. The l. are generally elliptical, entire or nearly so, and leathery, frequently hairy. The upper epidermis is stoutly cuticularised, and there is often water storage tissue between it and the green tissue. In the *Ericoideae* there are no true winter-buds or scale-l.; the plants are evergr., and the whorled l. needle-like, often through being rolled back on themselves to form a groove or even a chamber on the under side (cf. *Empetrum*).

The infl. commonly terminates a strongly growing shoot, and a sympodial growth tends to be formed. The fls. may be sol., but are more often in racemose groupings, each with a bract and two bracteoles, ♀, actinom. or slightly zygom. K 4—5; C (4—5) or 4—5 (*Ledeae*), usu. bell-shaped; A 8—10, obdipl., hypog. or rarely slightly epipet.; anthers intr., often with projecting appendages, the thecae often spreading at top, and opening by apical pores; pollen grains in tetrads. Below the gynoeceum is a fleshy disc secreting honey; G (4—5) sup. or inf., 4—5 loc., with axile plac.; ov. in each loc. 1—∞, anatrop.; style simple with capitate stigma. Capsule, drupe or berry. Embryo cylindrical, in copious endosp.

The fls. of the Brit. sp. are mostly bee-fls. with 'loose-pollen' mechanism. The hanging position and the size are suited to bees. The stigma projects so as to be first touched, and in probing for the honey at the base of the fl the bee touches the sta. or their projecting horns, and by thus shaking them causes a shower of pollen to fall from the tips of the anthers. *Calluna* is partly anemoph.; *Kalmia* has a curious explosive mechanism (see C., K., and *Erica*, &c.).

[BH. chars. Shrubs and trees, l. alt., opp., or whorled, exstip., usu. persistent. Infl. various. Fls. reg. ♂. K (4—5) or 4—5; C usu. (4—5), A usu. 8—10, sometimes adnate to base of C., usu. dehiscent by pores; disc various or 0; G (2—12), multi-loc., with style and peltate, capitate or lobed stigma; ov. usu. ∞ in each loc., anatrop., on axile plac. Caps., rarely drupe or berry, with small seeds. Endosp.]

Classification and chief genera (after Drude).

1. *RHODODENDROIDEAE* (septicidal caps.; seed with ribbed loose coat, often winged; C falling after flowering; sta. with upright or long adnate anthers, with no appendages):
 1. *Ledeae* (polypet.): *Ledum*.
 2. *Rhododendreae* (zygomorphic): *Rhododendron*, *Menziesia*.
 3. *Phyllodoceae* (actinomorphic): *Loiseleuria*, *Kalmia*, *Phyllodoce*, *Daboecia*.

II. *ARBUTOIDEAE* (berry or loculic. caps.; seed triangular or ovate, not winged; C falling; anthers much folded, with peg-like appendages, or prolonged into tubes, shedding the pollen upwards; ov. sup.):

1. *Andromedeae* (dry capsule with small calyx at base): Cassiope, Andromeda, Epigaea.
2. *Gaultherieae* (caps. or berry; K fleshy round caps., or leafy; anthers blunt at tip or with two short processes): Gaultheria, Pernettya.
3. *Arbuteae* (K as small disc at base of berry; anthers with two long processes): Arbutus, Arctostaphylos.

III. *VACCINIOIDEAE* (as II., but ov. inf.):

1. *Vaccinieae* (ovary sharply defined from peduncle): Gaylussacia, Vaccinium.
2. *Thibaudieae* (K decurrent on ovary and going over into peduncle): Pentapterygium, Agapetes, Paphia, Macleania, Thibaudia.

IV. *ERICOIDEAE* (fr. usu. loculic. caps., or nut; seeds round, not winged; C persistent after flowering; anther with short connective, thecae spreading above, frequently appendaged):

1. *Ericaceae* (> 1 seed in each loc.): Calluna, Erica.
2. *Salaxideae* (1 seed in each loc., capsule or nut): Eremia, Salaxis.

Ericaceous, heath-like.

Ericala Renealm. ex S. F. Gray = Gentiana Tourn. (Gent.).

Ericales. The 1st order of Sympetalae. The 4th cohort (BH.) of Gamopetalae.

Ericameria Nutt. (*Aplopappus* BH.). Compositae (3). 12 W. U.S.

Ericetal, growing on moors.

Erichsenia Hemsl. Leguminosae (III. 2). 1 Austr.

Ericinella Klotzsch. Ericaceae (IV. 1). 4 S. and W. Afr.

Ericoid (l.), narrow, nee 'le-like, ± rolled back.

Erigenia Nutt. Umbelliferae (III. 4). 1 E. U.S.

Erigeron L. Compositae (3). 150 cosmop., esp. N. Am.; 2 Brit. (flea-bane).

Erinacea (Tourn.) Adans. Leguminosae (III. 3). 1 S.W. Eur.

Erinna Phil. Liliaceae (IV). 1 Chili.

Erinocarpus Nimmo ex J. Grah. Tiliaceae. 1 S. India.

Erinus L. Scrophulariaceae (III. 1). 1 Pyrenees, Alps.

Erio- (Gr. pref.), woolly; **-phorous**, very cottony, or woolly.

Eriobotrya Lindl. Rosaceae (II). 12 subtrop. As. *E. japonica* Lindl. has ed. fr. (loquat), largely cult. in As.

Eriocaulanthus Chiov. Malpighiaceae (I). 3 trop. and S. Afr.

Eriocaulaceae (EP., BH.). Monocots. (Farinosae, Glumaceae BH.).

6 gen., 540 sp. mostly trop. and subtrop. Perenn. herbs with grass-like l. Fls. in heads (involucrate), inconspic., unisexual, 2- or 3-merous, reg. or ♂. P usu. sepaloid, in 2 whorls. ♂ with 4 or 6 sta. (3 or 2 in Paepalanthus); anthers di- or mono-thealous. ♀ with sup. ov. of (2—3) cpls., with one orthotr. pend. ov. in each loc. Caps. Endosp. Chief genera: Eriocaulon, Paepalanthus.

Eriocaulaceae (BH.) = preceding.

- Eriocaulon** L. Eriocaulaceae. 210 trop. and sub trop. *E. septangulare* With. in the eastern U.S. and also in the Scottish Hebrides and the west coast of Ireland (the only repres. of the fam. in Eur.).
- Eriocephalus** L. Compositae (7). 20 S.W. Afr. (capok-bosch).
- Eriocereus** Riccob. (*Cereus* p.p.). Cactaceae (III. 1). 9 warm Am.
- Eriochilus** R. Br. Orchidaceae (II. 2). 6 Austr.
- Eriochlamys** Sond. et F. Muell. Compositae (4). 2 S. Austr.
- Eriochloa** H. B. et K. Gramin. (5). 5 trop., sub trop. Fodders.
- Eriochrysis** Beauv. = *Saccharum* L. p.p. (Gramin.).
- Eriocnema** Naud. Melastomaceae (1). 2 Minas Gerães.
- Eriocoelum** Hook. f. Sapindaceae (1). 3 Guinea.
- Eriocoma** H. B. et K. (*Montanoa* Ll. et Lex.). Compos. (5). 20 trop. Am.
- Eriodendron** DC. (*Ceiba* Medic.). Bombacaceae. 9 trop., chiefly Am. *E. anfractuosum* DC. (silk-cotton, kapok) has its seeds enveloped in silky hairs, which are used for stuffing cushions, &c. [See Kingsley's *Westward Ho*, c. XXI.]
- Eriodes** Rolfe. Orchidaceae (II. 9). 1 Khasias.
- Eriodictyon** Benth. Hydrophyllaceae. 5 W. N. Am.
- Erioglossum** Blume. Sapindaceae (1). 2 S. E. As.
- Eriogonum** Michx. Polygonaceae (I. 1). 170 N. Am., esp. W. U.S. Differs from most of the fam., having no ocreae, and cymose umbels or heads of fls. The partial infls. (of a few or many fls. with special invol. of united br.) are combined into heads, &c.
- Eriogynia** Hook. (*Spiraea* p.p.). Rosaceae (I. 1). 1 N.W. Am.
- Eriolaena** DC. Sterculiaceae. 8 Indomal.
- Eriolithis** Gaertn. Rosaceae (inc. sed.). 1 Peru.
- Erioneuron** Nash (*Triodia* EP.). Gramineae (10). 1 N. Am.
- Erionia** Nor. Inc. sed. Nomen.
- Eriope** Humb. et Bonpl. Labiatae (VII). 20 trop. and sub trop. S. Am.
- Eriopetalum** Wight (*Brachystelma* BH.). Asclepiad. (II. 3). 4 Indomal.
- Eriophorum** L. Cyperaceae (1). 15 N. temp. chiefly on wet moors. 4 in Brit. (cotton-grass, cotton-sedge). The ♀ fls. are massed together; each has a P of bristles which after fert. grow out into long hairs acting as a means of distr. for the fr. The hairs are sometimes used in stuffing pillows, &c.
- Eriophyllum** Lag. Compositae (6). 15 N.W. Am.
- Eriophyton** Benth. Labiatae (VI). 1 Himalaya.
- Eriopsis** Lindl. Orchidaceae (II. 14). 4 trop. S. Am. Cult. orn. fl
- Eriosema** DC. Leguminosae (III. 10). 90 trop. and sub trop.
- Eriosolena** Blume = *Daphne* L. p.p. (Thymel.).
- Eriospermum** Jacq. Liliaceae (III). 50 S. Afr. Cult. orn. fl.
- Eriosphaera** Less. Compositae (4). 1 S. Afr.
- Eriospora** Hochst. Cyperaceae (II). 5 trop. Afr.
- Eriostemon** Sm. Rutaceae (1). 16 Austr., New Caled.
- Eriosyce** Phil. (*Echinocactus* p.p. EP.). Cactaceae (III. 1). 1 Chili.
- Eriothrix** Cass. Compositae (8). 1 Bourbon.
- Erioxylum** Rose et Standley. Malvaceae (4). 2 W. Mexico.
- Erisma** Rudge. Vochysiaceae. 7 N. Brazil, Guiana.
- Erismadelphus** Mildbraed. Vochysiaceae. 1 Cameroons.
- Erismanthus** Wall. Euphorbiaceae (A. II. 6). 2 Penang, Sumatra.

- Erithalis** P. Br. Rubiaceae (II. 3). 6 Florida, W. Indies.
- Eritrichium** Schrad. (*BH.* incl. *Cryptantha* Lehm.). Boraginaceae (IV. 2). 50 temp.
- Erlangea** Sch.-Bip. Compositae (I). 12 trop. Afr.
- Ernestia** DC. Melastomaceae (I). 3 trop. S. Am.
- Ernestimeyera** O. Ktze. = *Alberta* E. Mey (Rubiaceae).
- Ernodea** Sw. Rubiaceae (II. 10). 3 W.I., S.E. U.S.
- Erocallis** Rydberg (*Claytonia* p.p.). Portulacaceae. 1 Rockies.
- Eroded, erose**, slightly, irreg. toothed, as though gnawed.
- Erodendrum** Salisb. = *Protea* L. (Proteaceae).
- Erodiophyllum** F. Muell. Compositae (3). 2 Austr.
- Erodium** L'Hérit. Geraniaceae. 50 temp. (2 Brit.—Stork's-bill).
Like *Geranium*. The awn twists into a corkscrew with free end and is very hygroscopic (used for weather indicators, &c.). The mericarp has a sharp point with backward-pointing hairs. When it falls, the free end of the awn often catches against surrounding objects. If dampness supervene, the awn untwists and lengthens, and the fr. is driven into the soil. When dry the awn curls up, and the process may be repeated (cf. *Stipa*).
- Erophila** DC. (*Draba* p.p. *EP.*). Cruciferae (4). 4 Eur., Medit., 1 Brit.
- Erosion** Lunell (*Eragrostis* p.p.). Gramineae (10). 2 W. N. Am.
- Erpetion** DC. = *Viola* Tourn. (Viol.).
- Erubescens** (Lat.), blush-red.
- Eruca** Tourn. ex Adans. Cruciferae (2). 10 Medit. Oil is obtained from the seed of *E. sativa* Mill.
- Erucago** Tourn. ex Adans. = *Bunias* L. p.p. (Crucif.).
- Erucaria** Cerv. (*Bouteloua* *EP.*). Gramineae (11). 7 Mexico.
- Erucaria** Gaertn. Cruciferae (2). 6 Medit.
- Erucastrum** Presl (*Brassica* p.p. *BH.*). Crucif. (2). 15 Medit., Eur.
- Erucastrum** Schimp. et Spann. Cruciferae (2). 15 Medit., Mid-Eur.
- Ervatamia** Stapf. (*Tabernaemontana* p.p.). Apocyn. (I. 3). 30 palaeotrop.
- Ervilia** Link = *Vicia* Tourn. p.p. (Légum.).
- Ervum** Tourn. ex L. = *Vicia* Tourn. p.p. For *E. Lens* L. see *Lens*.
- Erycibe** Roxb. Convolvulaceae (I). 11 Indomal.
- Erycina** Lindl. Orchidaceae (II. 19). 1 Mexico.
- Eryngiophyllum** Greenman. Compositae (5). 1 Mexico.
- Eryngium** (Tourn.) L. Umbelliferae (II. 1). 220 trop. and temp. (exc. S. Afr.). 2 Brit. (eryngo or sea-holly) on coast, prickly herbs with thick r. and fleshy l. coated with wax. Fls. in cymose heads, blue, visited by bees. Fibre (*Caraguata* fibre) is obtained from the l. of *E. pandanifolium* Cham. et Schlecht.
- Eryngo**, *Eryngium*.
- Erysimum** (Tourn.) L. Cruciferae. 80 Medit., Eur., As. (*E. cheiranthoides* L., treacle mustard, in Brit.).
- Erythaea** S. Wats. Palmaceae (I. 2). 2 S. California.
- Erythraea** Renealm ex Borck. Gentianaceae (I. 2). 30 temp. *E. Centaurium* Pers. (centaury), Brit.
- Erythrina** L. Leguminosae (III. 10). 35 trop. and subtrop. *E. cristagalli* L. cult. Its bright red fls. are inverted; the wings are nearly aborted; the keel forms at its base a honey sac. *E. indica* Lam.

largely planted as shade for coffee, &c., and as support for pepper.

E. caffra Thunb. (Kaffir-boom) very light timber.

Erythro- (Gr. pref.), red.

Erythrocephalum Benth. Compositae (12). 10 trop. Afr.

Erythrochiton Nees et Mart. Rutaceae (1). 5 trop. Am. The infl. springs from the surface of a l., owing to adnation.

Erythrochlamys Guerke. Labiatae (VII). 1 trop. Afr.

Erythrococca Benth. Euphorbiaceae (A. II. 2). 5 trop. W. Afr.

Erythrocoma Greene. Rosaceae (III. 2). 5 W. N. Am.

Erythroides (*Physurus* Rich.). Orchid. (II. 2). 10 Polynes., Malaya.

Erythronium L. Liliaceae (v). 7 N. temp.

Erythropalum Blume. Olacaceae. 3 Himalaya to Malaya.

Erythrophleum Afzel. ex R. Br. Leguminosae (II. 1). 5 Afr., China, N. Austr. *E. guineense* G. Don is the red-water tree of Sierra Leone.

The bark is poisonous and is used by the native tribes as an ordeal.

Erythrophysa E. Mey. Sapindaceae (II). 2 S. Afr., Madagascar.

Erythropyxis Pierre. Scytotepalaceae. 1 Gaboon.

Erythroselinum Chiov. Umbelliferae (III. 6). 1 Ethiopia.

Erythrospermum Lam. Flacourtiaceae (1). 5 Madagascar to Samoa.

Erythroxylaceae (*EP.*, *Linaceae* p.p. *BH.*). Dicots. (Archichl. Geraniales). 2 gen., 195 sp. trop. Shrubs or trees with alt., entire, stip. l. Fl. reg., ♂ usu. heterostyled; K 5, C 5, A 5+5 united at base, G (3 or 4), usu. 1-loc.; ov. 1 or 2, pend. Drupe. Endosp.

Chief genus: *Erythroxylum*.

Erythroxylum P. Br. Erythroxylaceae. 190 trop. and subtrop., chiefly Am., incl. *E. Coca* Lam. (Peru; coca). Coca l., infused like tea or chewed with lime, enable the user to undergo great fatigue. Cocaine, a local anaesthetic, is prepared from them. Many have heterostyled fls.

Escallonia Mutis ex L. f. Saxifragaceae (v). 55 S. Am., chiefly Andine. Shrubs with alt., leathery, gland-dotted l. Ov. inf., 2—3 loc., with twice as many placentae and ∞ ovules.

Escalloniaceae (Warming). Saxifragaceae, § v.

Escape, a plant escaped from cult., and maintaining itself.

-escens (Lat. suffix), -ish, becoming.

Eschatogramme Trevisano. Polypodiaceae. 1 trop. Am.

Eschscholzia Cham. Papaveraceae (II). 120 western U.S., often cult. orn. fl. Recept. concave, fl. perig. In dull weather each petal rolls up on itself, enclosing some of the sta. The ripe fr. explodes and scatters the seeds; each valve as it dries has a tendency to roll up spirally and thus tension is set up.

Eschweilera Mart. (*Lecythis* p.p. *BH.*). Lecythidaceae. 80 trop. Am.

Eschweilera Zipp. (*Schefflera*, *Boerlagiodendron*, *EP.*). Araliaceae (1). 10 Malay Archipelago.

Escobedia Ruiz et Pav. Scrophulariaceae (III. 2). 2 trop. Am.

Escontria Rose (*Cereus* p.p.). Cactaceae (III. 1). 1 Mexico.

Esculentus (Lat.), edible.

Esenbeckia H. B. et K. Rutaceae (1). 15 trop. Am., W.I. The bark of some Braz. spp. (*angostura brasiliensis*, *quina*) is like angostura bark.

Esmeralda Reichb. f. (*Arachnanthe* *BH.*). Orchidaceae (II. 20). 1 Sikkim.

- Esmeraldia** Fourn. Asclepiadaceae (II. 21). 1 Venezuela.
- Espadaea** A. Rich. Solanaceae (4). (Verben. BH.) 1 Cuba.
- Esparto**, *Stipa tenacissima* L., *Ampelodesma*, *Lygeum*.
- Espeletia** Mutis. Compositae (5). 11 Andes. Char. pl. of the alpine region (Paramo). Aloe-like xero. with dense hairs.
- Espinal** (formation), spiny woodland (S. Am.).
- Esquirolia** Léveillé. Oleaceae (?). 1 China.
- Essence of violets**, *Iris florentina* L.
- Essential oils**, cf. oils; **-organs of fl.**, sta. and cpls.
- Esterhazyia** Mikan. Scrophulariaceae (III. 2). 3 Brazil.
- Estival**, pertaining to summer.
- Esula** Rupp. = *Euphorbia* L. p.p. (Euph.).
- Etaballia** Benth. (*Inocarpus* BH.). Leguminosae (III. 8). 1 Guiana.
- Etaerio**, aggregate (of fruit).
- Eteriscus** Desv. Rubiaceae (inc. sed.). 1 Guiana.
- Ethulia** L. Compositae (1). 2 palaeotrop.
- Etiolation**, yellowing and attenuation for want of light.
- Etiology**, the study of causes.
- Ettow** (W.I.), *Cordia Sebestana* L.
- Eu-** (Gr. pref.), true, typical; **-cyclic**, whorled with same number of organs in every whorl; **-geogenous**, weathering readily; **-tropous** (insects), long-tongued bees and hawk-moths.
- Euadenia** Oliv. Capparidaceae (II). 2 trop. Afr.
- Eubrachion** Hook. f. Loranthaceae (II). 2 S. Am.
- Eucalyptus** L'Hérit. Myrtaceae. 230 Austr., 2 or 3 Indomal. (blue-gum, iron-bark; stringy-bark, blood-wood, mallee, &c.). One of the most characteristic genera of the Austr. flora, easily known by the operculum of the fl. bud. Trees and shrubby trees. Some sp. reach an enormous size; *E. regnans* F. Muell. is officially recorded as reaching 326 ft. in height and 25 ft. 7 in. in girth at 6 ft., on Mt. Baw Baw near Melbourne (cf. Sequoia). The l. at first formed are often opp. and dorsiv., the later ones alt. and isobil., more suited to the climate. The barks vary much, but being easily recognized, are a valuable aid in the classification. The most common is smooth bark (gum trees) which exfoliates in patches; other kinds are bark scaly all over the trunk (blood-woods, &c.); bark thick and fibrous, the fibres set longitudinally (stringy-barks), or felted; bark hard and furrowed, often black with age (iron-barks). Infl. usu. an umbel which by lengthening of the axis passes to a panicle or corymb. The floral recept. is hollow and becomes woody in the fr. The K is thrown off as a lid when the fl. opens.
- On account of their rapid growth and economic value, these trees are now largely cult. in Algeria, &c. Many sp. yield valuable timber, e.g. *E. rostrata* Schlecht., *E. marginata* Sm. (jarrah), *E. diversifolia* F. Muell. (karri), &c.; *E. Globulus* Labill. (blue-gum) and others yield oil of eucalyptus; others yield oils, kino, &c.
- Eucephalus** Nutt. (*Aster* p.p.). Compositae (3). 10 N. Am.
- Euceraea** Mart. Flacourtiaceae (7). 1 Amazon valley.
- Euchaetis** Bartl. et Wendl. Rutaceae (1). 5 S. Afr.
- Eucharidium** Fisch. et Mey. Onagraceae (2). 3 California.
- Eucharis** Planch. et Linden. Amaryllidaceae (1). 6 trop. S. Am.

The sta. spring from the margin of the corona (see fam.). Cult. orn. fl.

Euchilopsis F. Muell. Leguminosae (III. 2). 1 W. Austr.

Euchilus R. Br. = *Pulteneaea* Sm. p.p. (Legum.).

Euchlaena Schrad. Gramineae (I). 1 Mex., *E. mexicana* Schrad. (teosinte). Very like *Zea* in habit and infl. The ♀ spikelets are free from one another and do not form a 'cob.' It is used as a cereal in Cent. Am. and as a fodder in warm countries.

Euchlora Eckl. et Zeyh. Leguminosae (III. 3). 1 S. Afr.

Euchresta Bennett. Leguminosae (III. 8). 3 Himalaya to Japan.

Euchroma Nutt. = *Castilleja* L. p.p. (Scroph.).

Euclea Murr. Ebenaceae. 25 Afr. *E. Pseudebenus* E. Mey (Orange R. ebony) and others, good wood. Fr. ed.

Euclidium R. Br. Cruciferae (4). 1 E. Medit.

Euclisia Greene (*Streptanthus* p.p.). Cruciferae (1). 15 Calif.

Eucnide Zucc. (*Mentzelia* BH.). Loasaceae. 6 Mex., S.W. U.S.

Eucomis L'Hérit. Liliaceae (v). 8 S. Afr. The dense spike of fls. is crowned by a tuft of bracts.

Eucommia Oliv. Eucommiaceae. 1 China, *E. ulmoides* Oliv. Tree with alt. exstip. l. and latex. Fls. naked, unisex., reg. Sta. 6—10. Cpls. (2), one aborting, with anatr. pend. ov. Samara. Endosp. Yields a medicinal bark, and rubber.

Eucommiaceae (EP.; *Magnoliaceae* p.p. BH.). Dicots. (Archichl. Rosales). Only genus *Eucommia*, *q.v.* Formerly in Trochodendraceae.

Eucorymbia Stapf. Apocynaceae (1. 3). 1 Borneo.

Eucosia Blume. Orchidaceae (II. 2). Java.

Eucrinum Nutt. ex Lindl. Liliaceae. Nomen.

Eucrosia Ker. Amaryllidaceae (1). 3 Peru, Ecuador.

Eucryphia Cav. Eucryphiaceae. 4 Chili, Austr., Tasm. Shrubs and trees with evergr. opp. stip. l. and sol. fl. ♀, reg., hemicyclic. K 4, C 4, A ∞, G (5—18), each with ∞ pend. ov. Ripe cpls. free. Endosp.

Eucryphiaceae (EP.; *Rosaceae* p.p., near *Quillaja*, BH.). Dicots. (Archichl. Parietales). Only genus *Eucryphia*, *q.v.*

Eudema Humb. et Bonpl. (*Braya* p.p. BH.). Cruciferae (4). 4 Ecuador to Chili.

Eufragia Griseb. = *Bartsia* L. (BH.) = *Parentucellia* Viv.

Eugeissona Griff. Palmaceae (III). 2 Malacca to New Guinea.

Eugenia Mich. ex L. (BH. incl. *Jambosa* DC., *Myrciaria* Berg., *Syzygium* Gaertn.). Myrtaceae (1). 625 trop. Many sp. have ed. fr., e.g. *E. malaccensis* L., the rose-apple or Malay apple, *E. Michellii* Lam. (Brazil cherry) and others. The dried fl.-buds of *E. caryophyllata* Thunb. form the spice cloves.

Eugeniopsis Berg. = *Marlieria* Cambess. p.p. (Myrt.).

Euglypha Chod. et Hassler. Aristolochiaceae. 1 Paraguay.

Euklisia Rydberg. Cruciferae (1). 1 S.E. U.S.

Eulalia Kunth = *Pollinia* Trin. p.p. (Gram.).

Eulenburgia Pax. Cucurbitaceae (3). 1 trop. Afr.

Eulobus Nutt. Onagraceae (2). 1 California.

✓ **Eulophia** R. Br. (excl. *Acrolophia*). Orchid. (II. 10). 80 trop., S. Afr.

Eulophidium Pfitz. Orchidaceae (II. 18). 1 Brazil, trop. Afr., Maur.

Eulophiella Rolfe. Orchidaceae (II. 10). 1 Madagascar. Cult. orn. fl.
Eulophiopsis Pfitz. Orchidaceae (II. 17). 2 S. Afr., Madag., E. Ind.
Eulophus Nutt. Umbelliferae (III. 5). 5 N. Am.
Eulychnia Phil. (*Cereus* p.p. *EP.*). Cactaceae. 3 Chili.
Eumorphia DC. Compositae (7). 4 S. Afr.
Eunanus Benth. = *Mimulus* L. p.p. (Scroph.).
Eunomia DC. (*Aethionema* p.p. *BH.*). Cruciferae (2). 10 Mts. of E. Medit.

Euonymus L. Celastraceae. 80 N. temp., and S.E. As. *E. europaeus* L., the spindle-tree, in Brit. Several sp. have curious outgrowths of cork upon their stems. The fls. are polygamous and protandrous. On the ripe seed is a bright red fleshy aril, serving in bird-dispersal. The development of the aril may easily be studied by examining seeds of various ages. The wood is used for spindles, pegs, &c., and furnishes good charcoal.

Euosmia Humb. et Bonpl. Rubiaceae (1. 7). 1 Venezuela.

Eupatoriastrium Greenman. Compositae (2). 1 Mexico.

Eupatoriopsis Hieron. Compositae (2). 1 Brazil.

Eupatorium (Tourn.) L. (incl. *Conoclinium* DC.). Compositae (2). 450 mostly Am., a few in Eur., As., trop. Afr. *E. cannabinum* L., hemp-agrimony, in Brit. Its fls. are largely visited by butterflies.

Euphorbia L. Euphorbiaceae (A. II. 8). 750 chiefly sub trop. and warm temp. (12 in Brit.). They differ very much in vegetative habit. The British sp. of spurge are herbs and so are many others, but shrubs are also frequent. The chief interest centres in those sp. that inhabit very dry places and have consequently a xerophytic habit. Most of these forms closely resemble Cactaceae (*q v.*), and sometimes when not in flr. it is very difficult to decide from the outside appearance whether one has to do with a *Euphorbia* or a Cactus. The presence of latex of course distinguishes the former. It is very interesting to see how similar conditions of life have called forth, in three different fams. not nearly allied to one another, such a similarity of habit as is seen in *Euphorbia*, the Cactaceae, and *Stapelia* (Asclepiadaceae). As in the cacti, we get almost spherical forms, ridged forms, cylindrical forms, &c. Many are armed with thorns. In all cases it is the stem which is fleshy. The outer tissue is green and does the assimilating work of the plant; the inner portion of the stem consists mainly of parenchymatous storage tissue.

For morphology cf. Goebel (*Pflanzenbiol. Schild.* p. 56). He divides the pl. into the following groups:

I. L. normal, well developed, serving a long time as assim. organs. (1) Shoot not water-storing: e.g. the British sp. (2) Storage in tubers below ground: *E. tuberosa* L. (3) Stem as reserve for water, &c., but not green: *E. bupleurifolia* Jacq. (cylindrical stem covered with corky scales=l. bases; l. borne in wet season, drop in dry). (4) Stem fleshy, green, leafy in wet season only: *E. nerifolia* L., &c.

II. L. abortive, dropping off early. Assim. and storage carried on in stem. Various types occur here (cf. Cactaceae) approaching ± nearly to perfectly spherical form. Some common ones are (1) *E. Tirucalli* L. (Zanzibar), with thin cylindrical shoots. *E. pendula*

Link is very similar and resembles *Rhipsalis* in Cactaceae. (2) *E. xylophylloides* Brongn. has flattened shoots (cf. *Phyllanthus* § *Xylophylla*, and *Epiphyllum* in Cactaceae). (3) *E. Caput-Medusae* L. has a stout stock giving off a number of thinner branches at the top. These are covered with little cushion-like papillae, closely crowded, which are really l. bases; the l. proper is undeveloped. Many sp. show this structure. (4) *E. mamillaris* L. has a thorn in the axil of each cushion (= a metamorphosed infl.-axis). If the cushions, as in the cacti, become 'fused,' we get a ridged stem, as is seen in (5) *E. polygona* Haw. (cf. *Echinopsis cereiformis* in Cactaceae), *E. grandicornis* and many others. Most of these sp. exhibit pairs of stout thorns which are the stips. of the abortive l. By the two horizontal thorns one can tell one of these pl. from a cactus, which has a group of thorns. (6) *E. meloformis* Ait. is nearly spherical but ribbed, whilst in (7) *E. globosa* Sims (cf. *Echinocactus*) we have an almost perfect sphere. [Cf. Cactaceae, and *Stapelia*, and compare all these succulent forms with one another. See also Goebel, *loc. cit.*]

Besides the above, note *E. splendens* Boj. and *E. Bojeri* Hook., pl. with thick stems and green l., the latter dropped in the dry season.

The other chief point of interest in *E.* is the *cyathium*, or infl. condensed to simulate a single fl. The resemblance is almost perfect. The general branching of the plant is cymose (dichasial). The partial infl. forms a cyathium by the non-development of its internodes, the absence of the P of the individual fls. and the reduction of each ♂ fl. to one sta. There is a perianth-like organ of 5 l., really bracts, and between these are 4 curious horn-like bodies (U-shaped in fig.), which are the combined stips. of the bracts.

Then follow a number of sta. arranged with the oldest nearest to the centre and each with a peculiar joint half-way up the stalk. In the middle of the cyathium is a 3-carpelled ovary on a long stalk, usu. ripe for pollination before any sta. ripen.

That this cyathium is an infl. and not a fl., consisting of a lot of ♂ fls., each of 1 sta., round a single ♀, is shown by the centrifugal (cymose) order of ripening of organs, and the joint on the sta.; at this point in the allied gen. *Anthostema*, there is a P, which shows that the sta. is really a reduced ♂ fl.

In *E.* § *Poinsettia* the infl. is rendered conspicuous by the bright red colour of the larger upper bracts. These sp. often cult. orn. infl.

The fruit explodes when ripe; the carpels split off from the central axis and open at the same moment.

Euphorbiaceae (EP., BH. incl. *Buxaceae*). Dicots. (Archichl. Geraniales; Unisexuales BH.). 220 gen., 4000 sp., cosmop., except arctic. Few sp. have a very wide range; the most widely-ranging genus is *Euphorbia*. Closely related to Geraniales by the structure of the gynoecium, &c., although separated a good deal from the other fams. of the order by the amount of reduction in most of its fls.

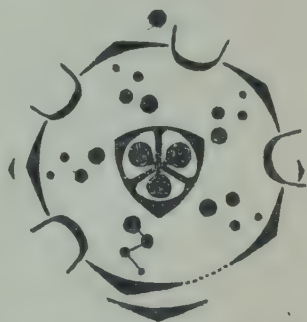


Diagram of central cyathium of infl. of *Euphorbia Peplus* L. (after Eichler, modified).

Most are shrubs or trees, a few herbaceous (*e.g.* the Brit. sp.). Many are xero.; a number of Australian sp. are of ericoid habit; several, esp. S. Afr., Euphorbias are cactus-like; others resemble Lauraceae, or possess phylloclades (*e.g.* *Phyllanthus* sp.). A few are lianes. L. usu. alt.; some have opp. l., some opp. l. above and alt. below. Stips. usu. present, but may be repres. by branched hair-like bodies (*Jatropha*), glands, or thorns. Nearly all contain latex in special laticiferous cells.

Infl. usu. complex; almost every type occurs. Often the first branching is racemose and all subsequent ones cymose. In some cases, *e.g.* *Dalechampia* and *Euphorbia* (*q.v.*), the partial infls. are so condensed as to give the appearance of single fls. The fls. are always unisexual, monoec. or dioec., reg., hypog. The P may be present as two whorls usu. 5-merous; more often there is only one (calyx) and frequently the fl. is naked. Sta. 1— ∞ , free or united in various ways. *Ricinus* has branched sta. *Phyllanthus cyclanthera* has the sta. united, with a ring-like common anther. $\bar{G}$ usu. (3), with axile placentae, and 3 loc. Styles usu. 2-lobed. The ovules are constant throughout the family and form its best distinctive feature; they are 1 or 2 in each loc., collateral, pendulous, anatropous, with ventral raphe. The micropyle is usu. covered by a caruncle, which is also found on the seed. The fruit is almost invariably a 'schizocarp-capsule.' It splits into cpls. often elastically, and at the same time each cpl. opens ventrally, letting the seed escape. See albuminous. [BH. chars. incl. those of Buxaceae, esp. dorsal raphe, and loculic. caps. or drupe.]

Most E. are poisonous. Several are important economic plants, *e.g.* *Manihot* (rubber, cassava), *Hevea* (rubber), *Croton*, *Ricinus*, &c.

Classification and chief genera (after Pax):

A. PLATYLOBEAE (cotyledons much broader than radicle):

I. PHYLLANTHOIDEAE (ovules 2 per loc.; no latex):

1. *Phyllanthae* (embryo large, little shorter than endosp.; δ calyx imbricate): *Phyllanthus*.
2. *Brideliace* (do., but δ calyx valvate): *Bridelia*.
3. *Daphniphyllae* (embryo short, 4—6 times shorter than endosp.): *Daphniphyllum*.

II. CROTONOIDEAE (ovules 1 per loc.; latex usu. present):

1. *Crotoneae* (sta. bent inwards in bud): *Croton*.
2. *Acalyphae* (sta. erect in bud; fl. usu. apetalous; δ calyx valvate; infl. a raceme, spike, or panicle, axillary or term.): *Mercurialis*, *Acalypha*, *Ricinus*, *Dalechampia*, *Tragia*.
3. *Jatrophae* (do.; infl. a dichasial panicle): *Hevea*, *Jatropha*.
4. *Adrianeae* (do.; infl. a simple term. spike or raceme): *Manihot*.
5. *Cluytieae* (δ calyx imbr.; δ fls. with petals, in groups or cymes, these partial infls. axillary or in complex infls.): *Codiaeum*, *Cluytia*.
6. *Gelonieae* (do. but apetalous): *Gelonium*.
7. *Hippomaneae* (do.; apetalous; infl. axillary or term., spike-like, the partial infl. cymes): *Stillingia*, *Hura*, *Hippomane*.

8. *Euphorbiae* (cyathium): *Anthostema*, *Euphorbia*.

B. STENOLOBEAE (cotyledons as wide as radicle):

I. *PORANTHEROIDEAE* (ovules 2 per loc.): *Poranthera*.

II. *RICINOCARPOIDEAE* (ovules 1 per loc.): *Ricinocarpus*.

Euphorbiodendron Millspaugh (*Euphorbia* p.p.). Euph. (A. II. 8).
12 trop. Am., W I.

Euphorbiopsis Lévillé (*Euphorbia* p.p.). Euph. (A. II. 8). 1 S.E. As.

Euphoria Comm. ex Juss. Sapindaceae (I). 6 trop. and subtrop. As.

Euphorianthus Radlk. Sapindaceae (I). 1 Malay Archipelago.

Euphoriopsis Radlk. Sapindaceae (I). 1 Indomal.

Euphrasia L. Scrophulariaceae (III. 3). 100 sp. extra-trop. *E. officinalis* L. (eyebright) in Brit. Semi-parasites with loose-pollen fls. (see fam.). The 4 anthers lie close under the upper lip of the fl.; the two upper cohere and also the upper to the lower on each side; the lower lobe of each has a projecting spine. Insects probing for honey shake the spines and receive a shower of pollen from among the anthers. The stigma protrudes beyond the sta. in most fls. so as to be touched first, but every stage can be found from highly protog. fls. with very protruding stigmas to almost homog. fls. whose stigma does not protrude and with self-fert.

Euphrona Vell. Inc. sed. 1 Brazil.

Euphronia Mart. Rosaceae (I. 2). 1 Brazil.

Euphrosine Allem. Inc. sed. Nomen.

Euphrosyne DC. Compositae (5). 1 Mexico.

Euplassa Salisb. Proteaceae (II). 8 trop. Am.

Eupomatia R. Br. Eupomatiaceae. 2 N.E. Austr., New Guinea. Fl. deeply perig., naked; A ∞ , G ∞ . Oil cells.

Eupomatiaceae (*E.P. Anonaceae* p.p. *BH.*). Dicots. (Archichl. Ranales).
Only genus *Eupomatia*, *g.v.*

Euptelea Sieb. et Zucc. Trochodendraceae. 3 Japan to Bengal.

Eureiandra Hook. f. Cucurbitaceae (3). 3 trop. Afr.

Euroschinus Hook. f. Anacardiaceae (3). 5 New Caled., E. Austr.

Eurotia Adans. Chenopodiaceae (A). 2 Medit., W. As., N. Am.

Eurya Thunb. Theaceae. 40 Mexico, S. Am., W. and E. Ind.

Euryale Salisb. Nymphaeaceae (III). 1 S.E. As. Fl. epigynous.
The seeds and roots are eaten in China.

Eurybia Cass. = *Olearia* Moench. (Comp.).

Eurybropsis DC. = *Vittadinia* A. Rich. (Comp.).

Eurycentrum Schlechter (*Cystorchis* p.p.). Orch. (II. 2). 2 N. G.,
Solomons.

Eurycles Salisb. Amaryllidaceae (I). 2 N. Austr., Malaya.

Eurycoma Jack. Simarubaceae. 3 S.E. As.

Eurygania Klotzsch (*Thibaudia* p.p. *EP.*). Eric. (III. 2). 8 Andes.

Eurylepis D. Don = *Erica* Tourn. p.p. (Eric.).

Eurylobium Hochst. Verbenaceae (2). 1 S. Afr.

Euryloma D. Don = *Erica* Tourn. p.p. (Eric.).

Euryops Cass. Compositae (8). 35 S. Afr. to Socotra.

Eurypetalum Harms. Leguminosae (II. 2). 1 Guinea.

Euryptera Nutt. (*Peucedanum* p.p.). Umbellif. (III. 6). 6 N. Am.

Eurysolen Prain. Labiatae (III). 1 Indomal.

Euryspermum Salisb. = *Leucadendron* R. Br. (Prot.).

- Eurystegia** D. Don = *Erica* Tourn. p.p. (*Eric.*).
Eurystyles Wawra (? = *Stenoptera* *EP.*). Zingib. or Orchid. 1 Brazil.
Eurytaenia Torr. et Gray. Umbelliferae (III. 5). 1 Texas.
Euscaphis Sieb. et Zucc. Staphyleaceae. 1 Japan.
Eusideroxylon Teijsm. et Binn. Lauraceae (I). 1 Borneo.
Eusporangiatae. See Filicales.
Eustegia Rafin. Melastomaceae (inc. sed.). 3, habitat?
Eustegia R. Br. Asclepiadaceae (II. 1). 5 S. Afr.
Eustephia Cav. Amaryllidaceae (I). 2 Peru, Argentina.
Eustephiopsis R. Fries. Amaryllidaceae (I). 2 Argentina.
Eustigma Gardn. et Champ. Hamamelidaceae. 2 Hongkong, Tonquin.
Eustoma Salisb. Gentianaceae (I. 1). 2 Centr. Am., W.I.
Eustrephus R. Br. Liliaceae (x). 1 E. Austr.
Eutacta Link = *Araucaria* Juss. p.p. (*Conif.*).
Eutaxia R. Br. Leguminosae (III. 2). 8 Austr.
Euterpe Gaertn. Palmae (IV. 1). 10 trop. Am. *E. edulis* Mart.
 (Assai palm) ed. fr.; a beverage is prepared by soaking it in water.
Eutetras A. Gray. Compositae (6). 1 Mexico.
Euthamia Ell. (*Solidago* p.p.). Compositae (3). 10 N. Am.
Euthemis Jack. Ochnaceae. 5 Indomal.
Euthystachys A. DC. Verbenaceae (2). 1 S. Afr.
Eutoca R. Br. = *Phacelia* Juss. p.p. (*Hydrophyll.*).
Eutrema R. Br. Cruciferae (2). 4 Siberia.
Eutriana Trin. = *Bouteloua* Lag. (*Gramin.*).
Euxena Calest. (*Arabis* p.p.). Cruciferae (4). 1 France.
Euxolus Rafin. = *Amarantus* L. (*Amarant.*).
Euxylophora Huber. Rutaceae (I). 1 Amazon valley. Good wood.
Euzomodendron Coss. Cruciferae (4). 1 S. Spain.
Evacidium Pomel (*Filago* p.p. *EP.*). Compositae (4). 1 N.W. Afr.
Evandra R. Br. Cyperaceae (II). 2 S.W. Austr.
Evansia Salisb. = *Iris* Tourn. (*Irid.*).
Evax Gaertn. Compositae (4). 15 Medit., N. Am.
Evelyna Poepp. et Endl. = *Elleanthus* Presl (*Orchid.*).
Evening primrose, *Oenothera*.
Everardia Ridl. Cyperaceae (II). 1 Roraima (Brit. Guiana).
Everettia Merrill. Melastomaceae (II). 1 Phil. Is.
Everettiodendron Merrill. Euphorbiaceae (A. I. 1). 1 Phil. Is.
Evergreen, bearing green l. throughout the year.
Everlasting, *Achyrachaena*, *Ammobium*, *Antennaria*, *Gnaphalium*,
Helichrysum, *Helipterum*; -grass (Am.), *Eriochloa*; mountain-
Antennaria; -pea (Am.), *Lathyrus*.
Eversmannia Bunge. Leguminosae (III. 7). 1 Persia.
Evodia Forst. Rutaceae (I). 45 trop., exc. Am.
Evodianthus Oerst. (*Carludovica* p.p. *BH.*). Cyclanthaceae. 2 Costa
 Rica, W.I.
Evolution, the development of new forms from old.
Evolvulus L. Convolvulaceae (I). 90 trop. and subtrop.
Evonymus (*Euonymus* *q.v.*) L. Celastraceae. 60 N. temp. and
 S.E. As.
Evota Rolfe. Orchidaceae (II. 1). 3 S.W. Cape Colony.
Ewartia Beauverd. Compositae (4). 3 S.E. Austr., Tasmania.

- Ex-** (Lat. pref.), not, without, outside, *e.g.* **-albuminous**, without albumen; **-centric**; **-cluded**, exerted; **-current**, with single straight main stem, *Pinus*; **-ogamy**, tendency of allied gametes to avoid pairing; **-ogenous**, arising from the external layers; **-ogens**, Coniferae and Dicotyledons; **-otropism**, tendency of lat. r. to grow away from main r.; **-serted**, protruding; **-stipulate**, &c.
- Exacum** L. Gentianaceae (I). 30 sp. palaeotrop. The style is bent to one side or other of the fl.; both occur on the same plant (enantio-styly, *q.v.*).
- Exarrhena** R. Br. = *Myosotis* L. p.p. (Borag.).
- Excelsus** (Lat.), lofty.
- Excoecaria** L. Euphorbiaceae (A. II. 7). 30 sp. trop., exc. Am. For *E. sebifera* Muell.-Arg. see *Sapium*.
- Excoecariopsis** Pax. Euphorbiaceae (A. II. 7). 1 S.W. Afr.
- Excremis** Willd. Liliaceae (III). 1 Andes.
- Exechostilus** K. Schum. Rubiaceae (II. I). 1 trop. Afr.
- Exfoliate**, to peel off.
- Exoacantha** Labill. Umbelliferae (III. 8). 1 Syria.
- Exocarpus** Labill. Santalaceae. 15 Austr., Malaya, Madag. Timber.
- Exocarya** Benth. Cyperaceae (II). 1 S.E. Austr.
- Exochaenium** Griseb. in DC. (*Belmontia* E. Mey.). Gent. (I). 3 trop. Afr.
- Exochogyne** C. B. Clarke. Cyperaceae (II). 1 Amazon valley.
- Exochorda** Lindl. Rosaceae (I. 2). 3 Centr. As. Cult. orn. shrubs.
- Exogonium** Choisy (*Ipomoea* p.p. *B.H.*). Convolvulaceae (I). 18 trop. Am. *E. Purga* Benth. (jalap) cult. for medic. resin.
- Exolobus** Fourn. Asclepiadaceae (II. 4). 4 Brazil.
- Exomicrum** Van Tiegh. = *Ouratea* Aubl. (Ochn.).
- Exomis** Fenzl. Chenopodiaceae (A). 1 S. Afr., St Helena.
- Exorrhiza** Becc. (*Kentia* p.p. *EP.*). Palmaceae (IV. I). 1 Fiji.
- Exostemma** Rich. Rubiaceae (I. 5). 20 W.I., S. Am. Febrifugal alkaloids are contained in the bark.
- Exostyles** Schott. Leguminosae (II. 9). 2 Brazil.
- Exotanthera** Turcz. (*Rinorea* *EP.*). Violaceae. 1 Madagascar.
- Exothea** Macfadyen. Sapindaceae (II). 2 W.I., C. Am.
- Exploding anthers**, *Broussonetia*, *Pilea*, *Urtica*; **-pollen**, &c., *Caladenia*, *Compositae* (*Cynareae*), *Corydalis*, *Cytisus*, *Genista*, *Kalmia*, *Medicago*, *Posoqueria*, *Pterostylis*, *Ulex*, &c.; **-fruit**, *cf.* Dispersal.
- Extra-** (Lat. pref.), beyond; **-axillary**, outside the axil; **-tropical**, outside the tropics; **-floral nectaries**, *cf.* Nectaries.
- Extrorse**, opening away from centre of fl.
- Eye**, a bud, *Helianthus*, *Solanum*; **-bright**, *Euphrasia officinalis* L.
- Eylesia** Sp. Moore. Scrophulariaceae (III. 2). 1 trop. Afr.
- Eyrthalia** Renealm. = *Gentiana* Tourn. (Gent.).
- Eysenhardtia** H. B. et K. Leguminosae (III. 6). 5 Texas to Guatemala.
- Eystathes** Lour. Inc. sed. 1 Cochin-China.
- F** (fl.-class), fls. suited to Lepidoptera, *Angraecum*, *Cuphea*, *Dianthus*, *Labiatae*, *Lonicera*, *Lychnis*, *Oenothera*, *Primula*, and *cf.* Butterfly and Moth fls.
- Faba** (Tourn.) L. = *Vicia* L. (Legum.).

Faberia Hemsl. Compositae (13). 1 China.

Fabiana Ruiz et Pav. Solanaceae (4). 15 S. S. Am. Cult. orn. shrubs.

Fabricia Gaertn. = *Leptospermum* Forst. (Myrt.).

Fabricia Scop. (*Alysicarpus* EP.). Leguminosae (III. 7). 16 palaeotrop.

Facelis Cass. Compositae (4). 3 temp. S. Am.

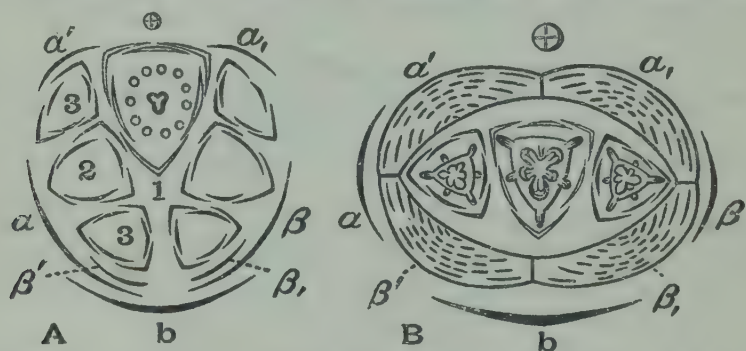
Facies, external appearance.

Facultative, incidental.

Fadogia Schweinf. Rubiaceae (II. 1). 20 Afr.

Fadyenia Hook. Polypodiaceae. 1, *F. prolifera* Hook., W. Ind. The sterile l. produce buds at the tips.

Fagaceae (EP.; *Cupuliferae* p.p. BH.). Dicots. (Archichl. Fagales). 5 gen., 350 sp.; three chief centres of distr.—*Fagus*, *Castanea* § *Eucastanea* and *Quercus* N. extra-trop., *Pasania* and *Castanopsis* in trop. As. and Calif., *Fagus* § *Nothofagus* in S. Am., N.Z., and



Floral diagrams of *Castanea vulgaris*, after Eichler. A, diagram of ♂ cyme in axil of catkin-leaf, the sta. and rudimentary gynoecium only shown in the first fl. The sequence of the fls. is indicated by the figures 1, 2, 3. B, diagram of ♀ partial infl. b=bract, αβ=bracteoles, α' β' α, β, =bracteoles of second order.

S. Austr. Most are trees with simple l. and scaly stipules that drop off as the l. expand. The fls. come out in the axils of the l. of the current year and are diclinous and anemoph., arranged in catkins or small spikes (exc. *Fagus* ♂). In general there is a close resemblance to Betulaceae, and, as in that fam., the fls. are usu. in dich. cymes in the axils of the catkin-l.; there are often, however, > three fls.

P bract-like, (4–7). ♂ fl. with as many to twice as many or ∞ sta. undivided, with or without rudimentary style. ♀ fls. usu. in dich. of 3 in *Castanea*, 2 in *Fagus*, 1 in *Quercus*, &c. $\bar{G}$ usu. (3) with 3 styles (exc. sp. of *Castanea*); loculi 3, usu. visible before fert. Plac. axile, each bearing 2 pend. anatrop. ov. with 2 integuments. Fr. a 1-seeded nut. Seeds without endosp.

The group of nuts is surrounded by a cup-like organ termed a *cupule*; in the oak there is one nut in each cupule, in the beech two, in the chestnut three. About the morphology of this organ there has been much discussion. Eichler (see diagram above, fig. B, and *Blüthendiagr.*) regards it as the combined bracteoles α' β' α, β, Prantl (Engler's *Bot. Jahrb.* VIII. 1887) as an axial outgrowth. See also Celakovsky in *Pringsheim's Jahrb.* XXI. 1890, and cf. Betulaceae. The cupule only becomes clearly visible after fert.

Some of the *F.* show signs of peculiar development of the embryo-sac, and other interesting features (see *Chalazogamæ*).

The order includes several important economic plants, chiefly valuable for their timber, *e.g.* oak (*Quercus*), beech (*Fagus*), chestnut (*Castanea*), &c.

Classification and genera (after Prantl):

1. *Fageæ* (fls. in dich., rarely sol. in axils of foliage-l.; lat. and single fr. 3-angled): *Fagus* (♂ fl. sol. or in dich. of 3; ♀ in 3 or sol.): *Nothofagus* (♂ in dich. of many; ♀ in 2s).
2. *Castaneæ* (♀ fls. in dich. or single in the axils of catkin-l.; fr. rounded at sides):

Style cylindrical, with pointed stigma, ♂ catkins erect.

Cupule with spines or hard papillæ.

Castanea.

Cupule with scales.

Pasania.

Style various, crowned by stigma, ♂ catkins pend.

Quercus.

Fagales (*EP.*), the 11th order of Dicots. *Archichlamydeæ*.

Fagara L. (*Zanthoxylum* *BH.*). *Rutaceæ* (1). 140 trop.

Fagelia Neck. *Leguminosæ* (III. 10). 1 S. Afr.

Fagelia Schwencke = *Calceolaria* L. (*Scroph.*).

Fagonia Tourn. ex L. *Zygophyllaceæ*. 20 *Medit.*, S. Afr., Calif., Chili.

Fagopyrum Tourn. ex Hall. *Polygonaceæ* (II. 2). 4 *As.* Fls. like *Polygonum*, but heterosyled, with long and short-styled forms. *F. esculentum* Moench. (buck-wheat) largely cult., esp. in N. Am., for its fr. (seed), in which there is a floury endosp. Also used as green fodder, and a good honey-plant.

Fagraea Thunb. *Loganiaceæ*. 20 *E. Ind.* to *Austr.*, often epiphytic. Some sp. have nectaries at the outside of the base of the fl.

Faguetia L. Marchand. *Anacardiaceæ* (3). 1 *Madag.*

Fagus (Tourn.) L. (*BH.* incl. *Nothofagus* Blume). *Fagaceæ* (1). 4 *N. temp.* *F. sylvatica* L. (beech, Brit. and large parts of Eur.) often forms homogeneous forests, and is accompanied by a peculiar undergrowth, *e.g.* *Asperula odorata*, *Lathrea squamaria*, &c. ♂ fls. in pendulous cymose heads, ♀ in pairs; each cupule encloses two nuts. The wood is hard, and much used in the arts; an oil is expressed from the nuts. Beech hedges in many districts; when growing low it does not drop its l., as it does when it takes the tree form, and thus affords good shelter in winter. A variety with red sap in the cells of the epidermis (copper-beech) is often cult. The beech only flowers every few years, and saves up material in the interval (*cf.* *Agave*).

Falcaria Riv. ex Rupp. *Umbelliferae* (III. 5). 4 *Medit.*, W. *As.*

Falcate, sickle-shaped.

Falconeria Hook. f. *Scrophulariaceæ* (III. 1). 1 W. Himalaya.

Falkia L. f. *Convolvulaceæ* (1). 6 *Afr.*

Fallugia Endl. *Rosaceæ* (III. 2). 1 *N. Am.*

False acacia, *Robinia*; **-asphodel** (Am.), *Tofieldia*; **-bromegrass**, *Brachypodium*; **-fruit**, the product of ovary with any other organ that developes, *e.g.* axis; **-hellebore** (Am.), *Veratrum*; **-hemp**, *Datisca*; **-indigo** (Am.), *Amorpha*, *Baptisia*; **-jalap**, *Mirabilis*; **-lettuce** (Am.), *Mulgedium*; **-mallow** (Am.), *Malvastrum*; **-nettle** (Am.), *Boehmeria*; **-oat-grass**, *Arrhenatherum*; **-septa**, partitions chamber-

- ing ovary into abnormal or unusual loculi, *Boraginaceae*, *Cruciferae*, *Gaylussacia*, *Linaceae*; **-whorl**, *Labiatae*.
- Family**, a group of allied genera, *e.g.* *Compositae*, *Cruciferae*.
- Fan-palm**, *Chamaerops*, *Sabal*, *Thrinax*, &c.
- Fanninia** Harv. *Asclepiadaceae* (II. 1). 1 Cape Colony.
- Fans**, *cf.* *Andropogon*, *Bamboos*, *Borassus*, &c.
- Faradaya** F. Muell. *Verbenaceae* (4). 6 Austr., Polynes.
- Faramea** Aubl. *Rubiaceae* (II. 8). 100 trop. S. Am., W. Ind. See Müller's *Fert. of Fls.*, p. 304 (dimorphic pollen).
- Farfugium** Lindl. = *Senecio* Tourn. (*BH.*) = *Ligularia* Cass. (Comp.).
- Fargesia** Franch. (*Phyllostachys* p.p. *EP.*). *Gramineae* (13). 1 China.
- Farinaceous** (endosp.), of starchy consistence.
- Farinosae** (Engler). The 8th order of *Monocotyledons*.
- Farinosus** (Lat.), covered with mealy powder.
- Farkleberry** (Am.), *Vaccinium arboreum* Marshall.
- Farmeria** Willis. *Podostemaceae*. 2 Ceylon, S. India.
- Farao** Welw. *Gentianaceae* (1). 12 Afr.
- Farquharia** Stapf. *Apocynaceae* (II. 1). 1 S. Nigeria.
- Farsetia** Turra p.p. *Cruciferae* (4). 10 E. Medit., trop. Afr.
- Fasciation**, lateral union of stems, branches, &c., *Celosia*.
- Fascicle**, a tuft of branches (adj. *fasciculate*).
- Fascicularia** Mez. *Bromeliaceae* (4). 4 Chili.
- Fastigate**, many branches || to stem, *Populus* (Lombardy poplar).
- Fatoua** Gaudich. *Moraceae* (1). 1 Austr. to Japan, Polynesia.
- Fats**, *cf.* oils.
- Fatsia** Decne. et Planch. (excl. *Echinopanax* Decne. et Planch., and *Tetrapanax* C. Koch). *Araliaceae*. 1 Japan, cult. orn. fol. For *F. papyrifera* Benth. et Hook. f. see *Tetrapanax*.
- Faujasia** Cass. *Compositae* (8). 3 Madagascar, Mascarenes.
- Faurea** Harv. *Proteaceae* (1). 10 S. and trop. Afr., Madag.
- Fauria** Franch. *Saxifragaceae* (1). 1 N. Japan.
- Fawcettia** F. Muell. *Menispermaceae*. 1 S.E. Austr.
- Faxonanthus** Greenman. *Scrophulariaceae* (I. 1). 1 Mexico.
- Faxonia** T. S. Brandege. *Compositae* (5). 1 Lower California.
- Faya** Neck. = *Crenea* Aubl. (*Lythrac.*).
- Feather-foil** (Am.), *Hottonia*; **-grass**, *Stipa*, (Am.) *Leptochloa*.
- Pedia** Gaertn. p.p. *Valerianaceae*. 1 Medit. Other sp. *cf.* *Valerianella*.
- Fedtschenkoa** Regel. *Cruciferae* (4). 1 Turkestan.
- Feeria** Buser (*Trachelium* p.p.). *Campanulaceae* (1). 1 Morocco.
- Fegimanra** Pierre. *Anacardiaceae* (1). 2 trop. Afr.
- Feijoa** Berg (*Orthostemon* *EP.*). *Myrtaceae* (1). 2 Brazil.
- Felicia** Cass. *Compositae* (3). 60 S. Afr. to Abyssinia.
- Female fl.**, *Aucuba*, *Begonia*, *Bryonia*, *Rhamnus*, *Sagittaria*.
- Fendlera** Engelm. et Gray. *Saxifragaceae* (III). 1 Texas.
- Fendlerella** A. A. Heller (*Fendlera* *EP.*). *Saxifrag.* (III). 1 N. Am.
- Fennel**, *Foeniculum*; **-flower**, *Nigella sativa* L.; **giant-**, *Ferula*.
- Fenugreek**, *Trigonella Foenum-graecum* L.
- Fenzlia** Benth. = *Gilia* Ruiz et Pav. p.p. (*Polemon.*).
- Fenzlia** Endl. *Myrtaceae* (1). 2 Austr.
- fer** (Lat. suffix), bearing.
- Feral**, wild.

Ferdinanda Lag. (*Zaluzania* Pers. p.p.). Compositae (5). 1 C. Am.

Ferdinandusa Pohl. Rubiaceae (1. 5). 10 W.I., trop. S. Am.

Feretia Delile. Rubiaceae (1. 8). 2 Upper Nile, trop. Afr.

Fergusonia Hook. f. Rubiaceae (11. 5). 1 Ceylon, S. India.

Ferment, cf. *Carica*, *Droseraceae*.

Fern, *Filicineae*; **beech-**, *Dryopteris*; **bird's nest-**, *Asplenium*; **bladder-**, *Cystopteris*; **bristle-**, *Trichomanes*; **elkhorn-**, *Platynerium*; **filmy**, *Hymenophyllum* (and fam.); **hard-**, *Lomaria*, *Blechnum*; **hart's tongue**, *Phyllitis*; **holly-**, *Polystichum*; **lady-**, *Athyrium*; **maiden-hair-**, *Adiantum*; **northern-**, *Blechnum*; **oak-**, *Dryopteris*; **parsley-**, *Cryptogramma*; **prickly shield-**, *Polystichum*; **royal-**, *Osmunda*; **shield-**, *Dryopteris*; **staghorn-**, *Platynerium*; **tree-**, *Cyathea*, &c.; **walking-**, *Asplenium*.

Fernandezia Lindl. = *Lockhartia* Hook. (Orchid.).

Fernandia Baill. Bignoniaceae (2). 1 Angola.

Fernelia Comm. ex Lam. Rubiaceae (1. 8). 4 Mascarenes.

Fernseea Baker. Bromeliaceae (4). 1 Itatiaia Mt (near Rio).

Feronia Correa. Rutaceae (v). 1 India to Java, *F. elephantum* Correa (elephant-apple or wood-apple; wood useful, and yields a gum; fr. ed.).

Feroniella Swingle. Rutaceae (v). 1 Indo-China.

Ferraria L. Iridaceae (11). 10 Afr. Cult. orn. fl.

Ferreirea Allem. Leguminosae (111. 1). 1 Rio de Janeiro.

Ferrugineus (Lat.), rust-coloured.

Fertile, capable of giving fruit.

Fertilisation, the union of ♂ and ♀ elements; **cross-**, between two fls. on different pl.; **self-**, within the same fl.

Ferula Tourn. ex L. Umbelliferae (111. 6). 60 Medit., Cent. As. *F. communis* L. cult. (giant-fennel). It only flowers after storing up materials for some years (cf. *Fagus*, *Agave*). *F. Narthex* Boiss. and *F. Assa-foetida* L. are the sources of the drug asafoetida, obtained by notching the roots; used as a condiment in Persia, &c. under the name 'food of the gods,' and as a stimulant in medicine. *F. galbaniflua* Boiss. et Buhse and *F. rubricaulis* Boiss. are the sources of the medic. gum galbanum.

Ferulago Koch. Umbelliferae (111. 6). 40 Medit., S. Eur.

Fescue-grass, *Festuca*.

Festuca (Tourn.). Gramineae (10). 100 cosmop.; 5 in Brit. (fescue-grass). The l. roll inwards in dry air (cf. *Stipa*). Many good pasture-grasses. When growing on mountains often viviparous (see fam.).

Fever-bush (Am.), *Lindera*; **-few**, *Chrysanthemum*, *Matricaria*; **-wort** (Am.), *Triosteum*.

Feuillea Gled. = *Fevillea* L.

Fevillea L. Cucurbitaceae (1). 6 trop. Am. 5 sta. all alike.

Fibigia Medic. (*Farsetia* p.p. *BII.*). Cruciferae (4). 12 E. Medit.

Fibraurea Lour. Menispermaceae. 4 trop. and sub trop. As.

Fibres, the strengthening tissues of plants, largely used in the arts for spinning, brush-making, plaiting, paper, rough weaving, tying, &c.; those of the bast are most generally useful. The chief *stem* or *leaf fibres* are perhaps *Abroma*, *Abutilon*, *Agave* (sisal, &c.), *Ampelodesma*, *Arenga*, *Attalea* (piassaba), *Boehmeria* (rhea, ramie), *Borassus*

(palmyra), Broussonetia, Camelina, Cannabis (hemp), Carludovica, Caryota (kitul), Chlorogalum, Cocos (coconut, coir), Copernicia, Corchorus (jute), Cordyline, Couratari, Crotalaria (Sunn-hemp), Cyperus, Debregeasia, Eryngium (caraguata), Furcraea (Mauritius hemp), Hibiscus, Jubaea, Laportea, Lardizabala, Leopoldinia (piassaba), Linum (flax), Lygeum, Maoutia, Marsdenia, Mauritia, Musa (Manila hemp), Pandanus, Phormium (New Zealand flax), Raphia (raffia), Sabal, Sansevieria (bowstring hemp), Spartium, Stipa (esparto), Tillandsia, Villebrunea, Yucca, &c. The chief *surface fibres* (on seeds, &c.) are Bombax, Calotropis, Chorisia, Cochlospermum, Eriodendron (kapok), Gossypium (cotton). Special or peculiar cases are Antiaris, Broussonetia, Lagetta, Luffa, &c. See Dodge, *Useful Fiber Plants*, Washington, 1897.

Fibrillose, with fibres.

Fibrocentrum Pierre. Sapotaceae (inc. sed.). 1 Brazil.

Fibrous root, one in tufts of uniform length, as in grasses.

Ficalhoa Hiern. Ericaceae (II). 1 trop. Afr..

Ficaria (Dill.) Hall = Ranunculus L. p.p. (Ranunc.).

Ficinia Schrad. Cyperaceae (I). 50 S. and trop. Afr.

Ficoidales (BH.). The 14th cohort of Polypetalae.

Ficoideae (BH.) = Aizoaceae.

Ficus Tourn. ex L. Moraceae (II). 700 trop., chiefly E. Ind. and Polynes., &c. Trees and shrubs of the most various habit. In general alt. entire l. with stips. which envelope the bud (acting as a protection to it against heat, &c.) and soon after their unfolding drop off. Adv. roots are very common.

F. elastica Roxb. (indiarubber tree) grows as a stout independent tree, usu. commencing epiphytically, and often reaching a great size. At its base are developed buttress-roots, radiating out in all directions; their depth is often several feet, while their thickness is only a few inches. From the branches are given off adv. roots which grow downwards and enter the soil. These grow in thickness and form great pillars supporting the branches. The l. are entire, and leathery, with a glossy surface. The stips. protect the bud. Rubber is obtained by tapping (cf. Hevea).

F. indica L. and *F. benghalensis* L. (banyan) show similar habit. The aerial roots form supporting pillars, and by their means the tree may reach immense size. (The banyan is sacred in India; the young roots are provided with tubes of bamboo to protect them, and the ground is prepared for them.) See plate in *Nat. Pfl.* of the famous tree at Calcutta.

F. religiosa L. (Peepul or Bo-tree) is similar, but its l. have a long acuminate apex, combined with an easily wetted surface. From the apex (*drip-tip*) the rain drips off rapidly after a shower and the l. is soon dry. In very wet trop. forests this property is of some importance.

F. Sycomorus L. (sycamore or mulberry fig) N. Afr. and *F. Carica* L. (fig) Eur., Medit., are also erect trees.

F. repens Rottl. is a small climbing sp. which takes hold of its support by aerial roots (as in ivy); these secrete a gummy substance containing caoutchouc, and then absorb the fluid constituents, leaving the caoutchouc as a cement, fastening the roots to their support

(Darwin, *Climbing Plants*, p. 185). *F. Thwaitesii* Miq. and other climbing sp. are heterophyllous, the l. on the climbing shoots small and different in shape.

F. Benjamina L. and other sp. climb up other trees giving off aerial clasping (negatively heliotropic) roots which surround the trunk. These roots thicken and unite into a network and finally often strangle the 'host' altogether. These sp. often become epiph. by the dying away of their lower portions, but like the Aroids they maintain communication with the ground by long aerial roots. Sometimes they commence as epiphytes and send down aerial roots to the soil.

The infl. is hollowed out, and consists of a number of fls. inside a pear-shaped common recept., which opens by a narrow mouth at the top. Within the mouth, in most, are the ♂ fls., while the rest of the cavity is filled with ♀ fls. (Sachs, *Physiol.* p. 434). The ♂ has a P and 1 or 2 sta., the ♀ a smaller P. Infl. as a whole protog.; mode of pollination extraordinary (*cf.* *Yucca*), there being a special insect (Blastophaga, a small wasp) adapted to *Ficus* fls. The gravid ♀ enters a fig infl. and lays eggs in the ovary; the ♂ wasps thus formed fertilise the ♀s and these as they emerge are pollinated by the ♂ fls. and carry the pollen to new figs. For further details and an account of the peculiar process of 'caprifigation,' see Müller's *Fert. of Fls.* p. 521, *Nat. Pfl.*, Cunningham on *F. Roxburghii* (rev. in *Bot. Centr.* 45, p. 344), and papers in *Bot. Jahrb.* II. 1890, p. 245.

Many sp. bear the fls. on old parts of the stem (cauliflory). Fr. multiple, composed of a lot of drupes inside the common fleshy recept.; that of *F. Carica* L. is the common fig.

Lac (shellac, &c.) is produced on several by the punctures of a small hemipterous insect (*cf.* *Butea*). Several, esp. *F. elastica* Roxb., yield caoutchouc. The buttress-roots are used as planks.

-fid, fidus (Lat.), cleft.

Fiddle-wood, *Citharexylum*.

Fiebrigia K. Fritsch. Gesneriaceae (II). 1 Bolivia.

Fiebrigiella Harms. Leguminosae (III. 7). 1 Bolivia.

Field botanists, notes for, see Collecting; **-madder**, *Sherardia*.

Fieldia A. Cunn. Gesneriaceae (I). 1 Australia.

Fig, *Ficus Carica* L.; **Hottentot-**, *Mesembryanthemum*; **Indian-**, *Opuntia*; **mulberry-**, *Ficus Sycomorus* L.; **-wort**, *Scrophularia*.

Figuierea Montr. Rubiaceae (inc. sed.). 1 New Caled.

Filago L. Compositae (4). 12 Eur., As., Am., N. Afr.; 3 Brit.

Filament, the stalk of a stamen.

Filbert, *Corylus*.

Filetia Miq. Acanthaceae (IV. B). 5 Sumatra, Malay Pen.

Filicales. One of the main divisions of Pteridophyta, char. by well-developed l. with vigorous growth, often large and much-branched; stem usu. short in proportion to the l. area, and not much branched. Sporangia borne on the l., usu. very numerous.

Classification (after Engler):

I. FILICALES LEPTOSPORANGIATAE. Sporangia from single superficial cells; prothallus above ground, usu. flattish (see below).

1. Eufilicineae.

2. Hydropterideae.

2. MARATTIALES. Sporangia from cell complex; prothallus flattish, antheridia on both sides, archegonia below.
3. OPHIOGLOSSALES. Sporangia from cell complex; prothallus wholly or partially subterranean, tuberous or cylindrical with sunken antheridia and archegonia; embryo often long subterranean. Fertile l. with branches bearing the sporangia.

For further details see next art., Pteridophyta, and the families. Cf. also *Nat. Pfl.*; Hooker and Baker, *Synopsis Filicum*; Christensen, *Index Filicum* (for nomenclature); Christ, *Die Farnkräuter der Erde*, 1897; Bower, papers on morphology and phylogeny in *Phil. Trans.* and *Ann. Bot.* of the last 25 years, and *Origin of a Land Flora*; Seward, *Fossil Botany*, &c., &c.

Filicales Leptosporangiatæ. The first order of Filicales, grouped as follows:

Sub-order 1. **EUFILICINEAE.** Sporangium wall usu. with a special ring or annulus of thickwalled cells, by whose means it opens; homosporous, with mono- or di-clinous prothalli.

1. *Hymenophyllaceae*: herbs with mesophyll usu. one cell thick, and marginal sori term. on naked veins.
2. *Cyatheaceae*: usu. tree or large ferns, with complete and oblique annulus.
3. *Polypodiaceae*: usu. herbaceous, with imperfect, vertically placed annulus, not closed at base, rarely absent.
4. *Parkeriaceae*: water ferns, sporangia sol. on anastomosing veins, almost spherical, with $\pm$ perfect, sometimes wanting, vertical annulus, and no true indusium, but inrolled l. margin.
5. *Matoniaceae*: herbs with dichotomous l., sporangia with complete oblique annulus, grouped at base of umbrella-like indusium.
6. *Gleicheniaceae*: herbs with l. repeatedly dichotomous, and sporangia with equatorial annulus; sori on the veins below.
7. *Schizaeaceae*: mostly small herbs with sessile sporangia, with complete annulus at apex, sol. on l. margin or in axils of bract-like segments.
8. *Osmundaceae*: short-stemmed ferns with sterile and fertile l. and naked sori, sporangia with annulus at one side of apex.

Sub-order 2. **HYDROPTERIDINEAE.** Sporangia usu. many in sori, enclosed in metam. l. segments or indusium-like covers; spores of two kinds; macrosporangia with one megaspore, microsporangia with many.

1. *Marsiliaceae*: sporocarps pluriloc.; sori 2— ∞ in l. apex, σ and ♀ mixed; ♀ prothallus with one archegonium, σ of one veg. cell and 2 antheridia.
2. *Salviniaceae*: sporocarps uniloc.; sori unisexual, on special water l. (*Salvinia*) or submerged lobes of water l. (*Azolla*); ♀ prothallus with a few archegonia, σ as in *Marsiliaceae*.
1. *Eufilicineae.* These plants with the *Marattiaceae* are generally known as Ferns. An outline of the general life history will be found under Pteridophyta.

The fertilised ovum on the prothallus develops directly and without any resting period into a fern-plant. There is no intermediate

period of rest as there is in flowering-plants when the seed is ripe. The prothallus continues to assimilate food and supply the young fern until the latter is able to do so for itself. The primary root remains small or withers away, and new ones are adv. formed from the stem or from the l. bases, as the pl. grows. The mature pl. may be of almost any size from the tiny filmy ferns (*Hymenophyllum*) to the large tree ferns (*e.g.* *Cyathea*, *Alsophila*). The stem grows by an apical cell, 2- or 3-sided, cutting off segments alt. on each face. From these by further divisions arise the tissues and members. The l. form a little way behind the growing apex as in fl. pl. One segment (but not every one) gives one l. ; the l. grows by an apical cell also. The stem may be erect, or may climb (as in many epiph.), or creep on the surface, or below it as a rhiz. Its growth is slow and branching infrequent. The l. are borne upon it, the internodes being as a rule short in erect, long in creeping stems. The phyllotaxy is not so definite as in fl. pl., but the l. are very commonly in ranks or straight lines dependent on the position of the segments cut off from the apical cell of the stem. The lat. buds arise either on the l. (as in *Dryopteris*, § *Nephrodium*) or on the stem; in the latter case they are rarely axillary; but usu. beside the l. The growing tips of stem and l. are often protected by brown scales, which are mere trichomes or superficial outgrowths.

The l. is usu. large with apical growth and circinate (coiled) vernation. The growth often lasts for a long time, or even permanently (*Lygodium*). The l. blade is usu. branched pinnately.

The repr. organs are borne upon the l. The unit is the sporangium or spore capsule, a small rounded body, stalked in fams. 2, 3 and 8 but sessile in the others. The caps. has a wall one cell thick, and in this is a group of cells with peculiarly thickened cell-walls, termed the *annulus*, by whose agency (its cells being hygroscopic) the opening of the sporangium is effected. Sometimes, as in many *Polypodiaceae*, the opening is explosive. The mech. is in principle similar to that by which anthers dehisce. The annulus may have various forms (see fams.), but the commonest is that of a row of cells running round the sporangium for about $\frac{3}{4}$ of its circumference.

The sporangia are usu. collected into groups (*sori*). The sorus may be naked, but is more usu. covered by an *indusium*, sometimes merely a fold of the l. itself, but more commonly a special outgrowth from the l., either epidermal or derived from the more deeply placed layers of tissue as well. The sori are usu. found on the veins of a l., often in the angle where a vein forks. They do not as a rule occur on all the l. Very often certain l. are fertile, the others not. In this case the fertile l. have usu. no green tissue at all, their pinnae being entirely covered with sori, *e.g.* *Osmunda* sp. In other cases, *e.g.* *Aneimia* sp., one part of a l. is sterile, the other fertile. Or again the sori, and this is most common, may be borne simply on the ordinary l. They are almost always on the lower surface only; they may entirely cover it, but more often are localised.

The spores are all of one kind and if sown under suitable conditions give rise to *prothalli*, flat green expansions living for a short or long period independently upon the soil (numbers may be seen where

ferns are growing). On the under surface are borne the repr. organs *antheridia* (♂) and *archegonia* (♀). The spermatozoids swim to the ova in the water which collects under the prothalli. The fert. ovum developes directly into a new fern-pl.

Two interesting modifications of the life cycle as above described are known. In *Pteris cretica*, *Dryopteris Filix-mas*, *Aspidium falcatum* and *Todea africana*, there occurs *apogamy* or the omission of the sexual process from the life-history (see diagram in Pteridophyta). The new fern-plant is produced from the prothallus by a process of budding; a growing point developes from the cells of the prothallus. The cycle thus runs:

Fern-plant → sporophylls → sporangia

↑ ↓
← ← prothallus

The other case, *apospory*, is found in *Athyrium Filix-foemina* var. *clarissima*, and in *Polystichum angulare* var. *pulcherrimum*, &c. Here spore-formation is replaced by a process of budding which gives rise to prothalli on the backs of the l., so that the life-cycle runs

Fern plant → →

↑ ↓
fertilised ovum ← { spermatozoid ← antheridium } ← prothallus
 { ovum ← archegonium }

The latter must not be confused with the 'vivipary' of *Asplenium bulbiferum*, &c., where the leaf-tissue buds directly into new pl., which for a time remain attached, but ultimately grow independently (*cf.* *Bryophyllum*, &c.).

A very large number of ferns are shade- and moisture-loving plants. Many however are xero. and alpine forms with reduced transpiration, exhibiting the familiar char. of such plants—reduced surface, thick cuticle, hairiness, incurving of leaves (*cf.* *Ericaceae*), and even, though rarely, succulence (*Polypodium adnascens*, *Drymoglossum carnosum*, &c.). The tree ferns and many others have water storage tissue in the stem. Many are epiphytic, esp. in the trop., though they may be found growing in this way even in Britain. *Cf.* *Platycerium*, *Polypodium*, &c. The spores, consisting only of one cell, are much lighter than is possible for a seed, and may be carried by wind to enormous distances.

2. *Hydropteridineae* or *Rhizocarpaceae*. The two fams. of this group, though they have much in common, are probably derived from different stocks. For details *cf.* fams.

As in the homosporous forms, so here the embryo gives rise directly to a new leafy pl., usu. aquatic, and exhibiting a creeping stem with a dorsiv. arrangement of the l. Roots may or may not be formed. The stem grows by an apical cell. The sporangia are enclosed in capsular structures termed *sporocarps*. In the *Salv.* this body contains one sorus only, in the *Mars.* more than one. The sorus in the former has one kind of sporangium only, in the latter usu. both. The spores germinate in water; the megaspore gives rise to a small green ? prothallus which remains enclosed in the burst spore. Its free surface bears a few archegonia. The microspore gives rise

(sometimes without escaping from the sporangium) to a rudimentary ♂ prothallus and antheridia. From the latter the spermatozoids escape and swim to the ♀ organ.

Filices, ferns proper, homosporous leptosporangiate Filicales.

Filicineae = Filicales.

Filicinean, relating to ferns.

✓ **Filicium** Thw. Sapindaceae (II). 3 trop. As. and Afr.

Filiform, thread-like.

Filipendula Tourn. ex L. (*Spiraea* p.p. *BH.*; *Ulmaria* p.p., *q.v.*).

Rosaceae (III. 8). 10 N. temp.

Fillaeopsis Harms. Leguminosae (I. 5). 1 trop. Afr.

Filmy ferns, *Hymenophyllaceae*.

Fimbriate, fringed.

Fimbristemma Turcz. Asclepiadaceae (II. 4). 1 trop. S. Am.

Fimbristylis Vahl. Cyperaceae (I). 225 chiefly trop.

Findlaya Bowdich. Inc. sed. 1 Madeira.

Findlaya Hook. f. Ericaceae (III. 2). 1 Trinidad.

Finger-grass (Am.), *Panicum*.

Fingerhuthia Nees ex Lehm. Gramineae (10). 1 S. Afr., Afghanistan.

Fingrigo (W.I.), *Pisonia aculeata* L.

Finlaysonia Wall. Asclepiadaceae (I). 1 Further India.

Finschia Warb. Proteaceae (II). 1 New Guinea.

Fintelmannia Kunth. Cyperaceae (II). 4 Brazil, Madagascar.

Fiorin-grass, *Agrostis alba* L.

Fir, *Abies*; **Douglas-**, *Pseudotsuga Douglasii* Carr.; **Scotch-**, *Pinus sylvestris* L.; **silver-**, *Picea alba* Link; **spruce-**, *Picea excelsa* Link; **umbrella-**, *Sciadopitys verticillata* Sieb. et Zucc.

Fire-bush, *Crataegus pyracantha* Medic.; **-pink** (Am.), *Silene*.

Firmiana Marsigli (*Sterculia* p.p. *BH.*). Sterculiaceae. 10 As.

Fischera Spreng. = Platysace Bunge (*BH.*) = Trachymene Rudge.

Fischeria DC. Asclepiadaceae (II. 1). 12 trop. Am., W.I.

Fissicalyx Benth. Leguminosae (III. 8). 1 Venezuela.

Fissiparous, splitting.

Fissipes Small (*Cypripedium* p.p.). Orchidaceae (I. 2). 1 N. Am.

Fistular, herbaceous and hollow, *Umbelliferae*.

Fistularia L. (*Rhinanthus* p.p.). Scroph. (III. 3). 9 N. temp.

Fitchia Hook. f. Compositae (13). 2 Polynesia.

✓ **Fittonia** E. Coen. Acanthaceae (IV. B). 2 Peru, cult. orn. fol.

Fitzgeraldia F. Muell. (*Cananga* p.p.). Anonaceae (I). 1 Austr.

Fitzroya Hook. f. Coniferae (Pinaceae; see C. for gen. char.). 2 Chili, Tasm.

Five-finger (Am.), *Potentilla*; (W.I.) *Syngonium*.

Fixed light position, that taken up by l. with regard to light.

Fixed oils, *cf.* Oils.

Flabellaria Cav. Malpighiaceae (I). 1 W. Afr.

Flabellate, **flabelliform**, fan-shaped.

Flacourtia (Comm.) L'Hérit. Flacourtiaceae. 15 trop. As., Afr.

F. Ramontchi L'Hérit. (Madagascar plum), &c. have ed. drupes.

Flacourtiaceae (*EP.*; *Bixiniaceae* p.p., *Samydaceae* *BH.*). Dicot. (Archichl. Parietales). 70 gen., 500 sp. trop. and subtrop. trees and shrubs, mostly with alt. stip. leathery l., often ± two-ranked. Fls.

sol. or in racemose, cymose, or mixed infls., often unisexual, reg. The axis is convex, and between C and A it forms a disc or gives rise to various effigurations, usu. glands or scales. K 2—15, C 10—0, A usu. ∞ , sometimes united into antepetalous groups, the anthers usu. opening by lat. slits, $\underline{G}$ (2—10) or semi-inf., 1-loc. with parietal plac. which often project far into the cavity; ov. ∞ , anatr.; styles as many as plac., or united. Berry or capsule; seed often with aril; embryo straight, in endosp.

Classification and chief genera (after Engler):

1. *Erythrospermeae* (fl. $\frac{\text{q}}{\text{r}}$; P ∞ spiral, A 5—8 with lineal anthers, caps.); *Erythrospermum*.
2. *Oncobaeae* (fl. $\frac{\text{q}}{\text{r}}$; K 3—5, C 4—10 imbr., A ∞ with lineal anthers, $\underline{G}$ (3—10) each with ∞ ov.; fr. not, or late, dehisc.); *Oncoba*.
3. *Pangieae* (fl. dioec.; K 2—5, C 5—8 with scales at base, A ∞ —5, $\underline{G}$ (2—6) each with ∞ —1 ov.; berry); *Pangium*, *Hydnocarpus*.
4. *Flacourtieae* (K 4—6 imbr., C. usu. 0, A ∞ with short anthers, $\underline{G}$ as last; berry or caps.); *Flacourtia*, *Xylosma*.
5. *Scolopieae* (K 4—6 almost valvate, C small or 0, A ∞ perig. with short anthers, $\underline{G}$ (3—6), each with ∞ —1 ov., 1- or multi-loc.); *Scolopia*, *Prockia*, *Banara*.
6. *Paropsieae* (K 5, axis slightly tubular, with disc or even gynophore, C 5, A ∞ —20 or 9—5, perig. or at base of gynophore sometimes united, $\underline{G}$ (3—5), usu. with ∞ ov.; palaeotrop.); *Barteria*.
7. *Casearieae* (K 4—5 imbr., C 0, A ∞ or few, sometimes stds., perig., $\underline{G}$ (2—6), usu. (3), each with ∞ —2 ov.); *Casearia*.
8. *Abatieae* (K 4, valvate, C 0, A ∞ —8, perig., no stds., $\underline{G}$ (2—4) with ∞ ov.; l. opp.); *Abatia*.
9. *Homalieae* (K, C 4—15, A 4—15 or ∞ in bundles, antepetalous, perig. or epig.; l. spiral, rarely paired); *Homalium*.
10. *Phyllobotryeae* (fl. $\frac{\text{q}}{\text{r}}$ or polyg., K, C 3—5, A 5— ∞ , hypog., $\underline{G}$ (2—4), uniloc. with ∞ ov.; l. alt. with epiphyllous infl.); *Phyllobotryum*.

Flag, sweet, *Acorus Calamus* L.; - **yellow**, *Iris Pseudacorus* L.

Flagellaria L. Flagellariaceae. 2 trop. Afr., As., Fiji.

Flagellariaceae (EP., BH.). Monocots. (Farinosae; Calycinae BH.). 3 gen., 8 sp., palaeotrop. Pl. with long many-nerved l., sometimes climbing, with panicles of fl., reg. $\frac{\text{q}}{\text{r}}$ or unisexual, 3-merous. $\underline{G}$ (3), 3-loc. each with 1 axile anatr. ov. Fr. 3-loc. or with 3—1 stones. Endosp.

Flagellate, with whip-like runners.

Flagenium Baill. Rubiaceae (I. 8). 1 Madag.

Flamboyante, *Poinciana regia* Boj., *Colvillea*.

Flame-tree (Austr.), *Nuytsia*, *Sterculia*.

Flamingo plant, *Anthurium*.

Flanagania Schlechter. Asclepiadaceae (II. 1). 1 S. Afr.

Flannel-flower, *Actinotus*.

Flaveria Juss. Compositae (6). 10 Am.

Flavescent, becoming yellow, yellowish.

Flavus (Lat.), yellow.

- Flax**, *Linum usitatissimum* L.; **New Zealand-**, *Phormium tenax* Forst.; **purging-**, *Linum*; **spurge-**, *Daphne Gnidium* L.
- Flea-bane**, *Erigeron*, *Pulicaria*; (W.I.), *Vernonia arborescens* Sw.
- Fleischmannia** Sch.-Bip. Compositae (2). 4 Centr. Am.
- Flemingia** Roxb. ex Ait. (*Moghania EP.*). Legum. (III. 10). 20 palaeotrop.
- Fleshy fr.**, see Dispersal of seeds, Edible products; **leaves**, *Agave*, *Aizoaceae*, *Aloe*, *Anacampseros*, *Bromeliaceae*, *Chenopodiaceae*, *Crassulaceae*, *Dischidia*, *Gesneriaceae*, *Glaux*, *Mesembryanthemum*, *Orchidaceae*, *Saxifragaceae*, *Suaeda*, *Yucca*; **stem**, *Cactaceae*, *Ceropegia*, *Euphorbia*, *Stapelia*, &c.
- Fleur-de-lis**, *Iris*.
- Fleurya** Gaudich. Urticaceae (1). 8 trop.
- Flexularia** Rafin. Gramineae (inc. sed.). 1 N. Am.
- Flexuose** (stem), zigzag.
- Flindersia** R. Br. Rutac. (II) (*Meliac. BH.*). 15 E. Austr., Malaya.
- Flixweed**, *Sisymbrium Sophia* L.
- Floating heart** (Am.), *Limnanthemum*.
- Floerkea** Willd. Limnanthaceae. 1 N. Am.
- Flomosia** Rafin. = *Verbascum* Tourn. (Scroph.).
- Flora**, a catalogue of the pl. growing in a country.
- Floral** (*cf.* also under **Flower**) **diagram** (*cf.* those given here under many fams.), an imaginary section through the bud, showing the arrangement of parts, aestivation, &c.; it may also be used (*cf.* *Polygonaceae*) to express theoretical views as to multiplication or suppression of organs. At the top is the original stem upon which the fl. is a branch, and at bottom the bract; lat. are the bracteoles; then follow K, C, A, and G, showing their relative positions to one another and to the br. When free they are shown separate; when concrescent, they are joined by lines; the anthers show the mode of opening, the ovary the placentation, stigmas, &c.; **-envelope**, the perianth; **-formula**, a convenient way of showing many features of a fl., largely used here. K 3, C 3, A 3, G 3, means calyx of 3 free sepals, corolla of 3 free petals, &c.; ovary superior. K (3), C (3), A 3 + 3, G (3), means calyx (corolla) of 3 concrescent sepals (petals), stamens in two whorls of 3 each, free, ovary of 3 concrescent carpels, inferior, and so on; **-kingdoms**, see **Floral Regions**; **-leaves**, the parts of the fl., esp. K and C; **-mechanisms**, mechanisms to contrive as far as possible cross-fertilisation for a fl., and to ensure that the visiting insect shall receive pollen or touch the stigma, or to ensure self-fertilisation. They may be classed as follows (see individual headings for examples): *Anemophily*, see *Pollination by Wind*; *Cleistogamy* (production of self-fertilising fl.); *Dichogamy* (ripening of ♂ and ♀ at different times, with or without movements of sta. and style); *Dioecism* and other sex-distributions (*q.v.*); *Explosive mechanisms*; *Heterostylism*; *Loose-pollen mechanisms*; *Piston-mechanisms*; *Pollen-prepotency*; *Pollination by Animals*; *Pollination by Water*; *Pollination by Wind*; *Self-sterility*; *Sensitive stamens*; *Sensitive stigmas*; *Special mechanisms*, such as *Asclepiadaceae*, *Ficus*, *Orchidaceae*, *Salvia*, *Yucca*, &c.; *Style-projection*; *Trap Flowers*, &c. See Knuth, *Handbook of Floral Pollination*; Oxford; **-regions**,

regions char. by the possession of a considerable number of local (endemic) forms; the greater their number, and the higher their systematic rank, the more natural is the region. Engler divides the world as follows: **I.** Northern Extra-tropical Floral Kingdom, with 9 regions, (1) *Arctic*, (2) *Sub-Arctic* or *Conifer*, (3) *Mid-European*, (4) *Macronesian* (Azores, Madeira, Canaries, Cape Verdes), (5) *Mediterranean*, including land all round that sea, (6) *Central Asiatic*, (7) *Temp. E. Asiatic*, (8) *Pacific N. Am.*, (9) *Atlantic N. Am.*: **II.** Palaeotropic Floral Kingdom, with 9 regions, (1) *N. Afr.—Indian desert*, (2) *Afr. forest and steppe*, (3) *S. W. S. Afr.*, (4) *S. Atl. islands*, (5) *Madagascar and islands*, (6) *Nearer India*, (7) *Monsoonia* (warmer Himal., Malaya, N. Austr., Polynesia) (this and 6 are usu. united in this book as *Indomalaya*, and sometimes called *E.* or *W.*), (8) *E. China and S. Jap.*, (9) *Hawaiian*: **III.** Centr. and S. American Floral Kingdom, with 5 regions, (1) *Mid-American Xero.* (S. W. U.S., Mex.), (2) *Trop. Am.*, (3) *Andine*, (4) *Galapagos*, (5) *Juan Fernandez*: **IV.** Austral Floral Kingdom, with 6 regions, (1) *Antarctic S. Am.*, (2) *Antarctic Continental*, (3) *Kerguelen*, (4) *New Zealand*, (5) *Australia*, (6) *Tristan da Cunha, St Paul, Amsterdam*: **V.** Oceanic Floral Kingdom, with 3 regions, *Boreal*, *Tropical*, and *Austral*; **-symmetry** shows two chief cases, if radial the fl. is *regular* or *actinomorphic* (even if the cpls. be fewer in number), *Ranunculaceae*, *Rosaceae*, &c., if not, some members being omitted in the outer whorls, or all members of a whorl not alike, it is *irregular* and may be *zygomorphic* (divisible into two halves, each the reflection of the other), *Labiatae*, *Scrophulariaceae*, &c., or *asymmetrical* (not so divisible), *Valerianaceae*. Cf. Floral Diagram, &c.

Flores verbasci, *Verbascum*.

Florestina Cass. Compositae (6). 3 Mexico.

Floret, small fl. of a cluster.

Floribundus (Lat.), producing many fls.

Florida Velvet Bean, *Mucuna*.

Floridus (Lat.), showy.

-florus (Lat. suffix), -flowered.

Flos (Lat.), a flower.

Floscopa Lour. Commelinaceae. 15 trop. and sub trop.

Flotovia Spreng. = *Chuquiraga* Juss. (Compos.).

Flourensia DC. Compositae (5). 10 Arizona to Argentina.

Flower, a repr. short shoot, consisting of an axis (*receptacle*, *q.v.*, *thalamus*, *torus*), bearing essential organs or *sporophylls*, the *androecium* or *stamens* (*q.v.*), and *gynoeceum* or *carpels* (*q.v.*), or only one of them in *diclinous* fl.; also usu. some accessory organs or *perianth* (*q.v.*), most often divided into an outer green whorl or *calyx*, and inner coloured one or *corolla*; **and insects**, the relations between fls. and the insects which pollinate them, cf. Flower-classes, Floral Mechanisms, &c.; **-axis**, the receptacle; **-bud**, the young fl., in which the l. are packed in a definite way (*aestivation*, *q.v.*); **-classes**, the classes into which fls. may be divided according to their relations to insects, &c.; **W** (wind-pollinated), **Po.** (offering pollen only), **A** (with freely exposed honey), **AB** (partly concealed honey), **B** (fully concealed honey), **B'** (do. in aggregated infls.), **F** (Lepidoptera fls. with long

- tubes), **H** (bee fls. with long tubes, zygomorphism, &c.); see individual classes for examples; **colours of** - (usu. in corolla) are due to *chloroplastids* or bodies carrying chlorophyll (rare), *Deherainea*, *chromoplastids* or bodies carrying colours, or to coloured cell-sap; all colours change readily to white, and there are several cases of change (*q.v.*) of one colour to another; bees are inclined to prefer blue, butterflies red and white; **-cup**, a hollow receptacle; **-de-luce**, Iris; **-description**, *cf.* Description; **-**, **doubling of**, change of sta. to petals, or in Compositae of tubular to ligulate fl.; **-fence** (Barbados), *Caesalpinia pulcherrima* Sw.; **-mechanisms**, see Floral; **-movements**, protecting against cold and wet, *e.g.* a bending downwards, *Anemone*, *Bellis*, *Daucus*, *Fragaria*, *Linum*, *Papaver*, or a closing of the petals, *Anagallis*, *Bellis*, *Calandrinia*, *Eschscholtzia*, *Tragopogon*; **-pride** (W.I.), *Caesalpinia pulcherrima* Sw.; **-tube**, the concrescent portion.
- Flowering ash**, *Fraxinus*; **-currant**, *Ribes sanguineum* Pursh; **-fern**, *Osmunda*; **-rush**, *Butomus umbellatus* L.
- Fluckigeria** Rusby (*Kohlerianthus* Fritsch, *EP.*). Gesneriaceae (I).
1 Bolivia.
- Flueckigeria** O. Ktze. (*Ledenbergia* Klotzsch). Phytolaccaceae. 1 trop.
S. Am., W.I.
- Flueggea** Rich. = *Ophiopogon* Ker-Gawl. (Lili.).
- Flueggea** Willd. Euphorbiaceae (A. I. 1). 6 palaeotrop.
- Flueggeopsis** K. Schum. (*Phyllanthus* p.p. *EP.*). Euphorb. (A. I. 1).
3 Malaya.
- Fluitans** (Lat.), floating.
- Fluviales** = Helobiae.
- Fluviatilis** (Lat.), growing in streams.
- Fly-flowers**, *Amorphophallus*, *Araceae*, *Arum*, *Asarum*, *Cobaea*, *Compositae*, *Crassulaceae*, *Cynanchum*, *Hedera*, *Helicodiceris*, *Paris*, *Stapelia*, *Umbelliferae*, *Veronica*; **-orchis**, *Ophrys* *Muscifera* Huds.; **-trap**, *American*, *Apocynum*; **-**, **Venus'**, *Dionaea muscipula* Ellis.
- Fockea** Endl. Asclepiadaceae (II. 3). 6 Afr.
- Fodder**. The food of grazing animals, &c. The grasses (fresh or dry) and Leguminosae (esp. the pods) are most generally useful. Innumerable pl. are used in different countries; among the most important are *Acacia*, *Agrostis*, *Alopecurus* (fox-tail grass), *Andropogon*, *Anthoxanthum*, *Anthyllis*, *Arachis*, *Aristida*, *Astragalus*, *Atriplex*, *Avena* (oat), *Bouteloua* (mesquit grass), *Brassica*, *Briza*, *Bromus*, *Buchloe* (buffalo grass), *Celtis*, *Cenchrus*, *Ceratonia* (algaroba), *Chionachne*, *Chloris*, *Chrysopogon*, *Cicer* (chick-pea), *Cyamopsis*, *Cynodon* (Bermuda grass), *Cynosurus* (dog's tail grass), *Dactylis* (cock's foot grass), *Daucus*, *Deschampsia*, *Desmodium*, *Dolichos* (horse-gram), *Ehrharta*, *Eleusine* (ragi), *Eragrostis*, *Eriochloa*, *Eruca*, *Ervum*, *Fagopyrum* (buckwheat), *Festuca* (fescue), *Galega*, *Glyceria*, *Gossypium* (cotton-seed), *Heteropogon*, *Hippocrepis*, *Holcus*, *Hordeum* (barley), *Imperata*, *Ischaemum*, *Lathyrus*, *Leersia*, *Lespedeza*, *Lolium* (rye grass), *Lotus*, *Lupinus* (lupin), *Medicago* (lucerne, &c.), *Melica*, *Melilotus*, *Milium*, *Mucuna* (Florida velvet bean), *Muehlenbergia*, *Musa*, *Oncobrychis* (sainfoin), *Ornithopus*, *Oryza* (rice), *Panicum* (millet, Guinea grass, &c.), *Paspalum*, *Pennisetum* (bajri), *Phaseolus* (gram, beans), *Phleum* (timothy), *Pisum* (pea), *Poa* (meadow

- grass), *Secale* (rye), *Sesamum* (gingelly), *Setaria* (Italian millet), *Sorghum* (Guinea corn), *Spergula*, *Symphytum*, *Trifolium* (clover, &c.), *Tripsacum*, *Triticum* (wheat), *Vicia* (vetch), *Zea* (maize), *Zizyphus*.
- Foeniculum** Tourn. ex L. Umbelliferae (III. 5). 4 Medit., Eur., 1 Brit. (fennel). The young l. of *F. officinale* All. are a good veg. when blanched like celery, and the fr. is a condiment.
- Foetid horehound**, *Ballota nigra* L.
- Foetidia** Comm. ex Lam. Lecythidaceae. 3 Madag., Masc.
- Fokienia** A. Henry et H. H. Thomas. Coniferae (Pinaceae, see C. for gen. char.). 1 E. China.
- Folia Jaborandi**, *Pilocarpus*.
- Foliaceous**, leaf-like, leaf-bearing.
- Foliage plants**, cult. for orn. foliage, e.g. *Begonia*, *Caladium*, *Codiaeum*, *Coleus*, many *Coniferae*, *Cordyline*, *Cortaderia*, *Dracaena*, *Eryngium*, many *Ferns*, *Fittonia*, *Gunnera*, *Gesneria*, many *Palmae*, *Panax*, *Pelargonium*, *Phormium*, *Rheum*, *Rhus*, *Selaginella*, *Smilax*, *Sonerila*, many trees.
- Folium** (Lat.), a leaf; **-folius** (Lat. suffix), leaved.
- Follicle**, a dry dehis. fr. of one cpl., dehis. on ventral side only; *Aconitum*, *Apocynaceae*, *Asclepiadaceae*, *Banksia*, *Crassulaceae*.
- Folotsia** Costantin et Bois. Asclepiadaceae (II. 1). 1 Madag.
- Fonna** Lunell (*Phlox* p.p.). Polemoniaceae. 2 W. U.S.
- Fontainea** Heckel. Euphorbiaceae (A. II. 5). 1 New Caled., E. Austr.
- Fontanesia** Labill. Oleaceae. 1 Sicily, W. As.
- Fontanus** (Lat.), growing in or near a spring.
- Food**, see Edible Products, Fodder; **-bodies**, *Acacia*, *Cecropia*; **- of the gods**, *Ferula*.
- Fool's parsley**, *Aethusa Cynapium* L.
- Foot**, organ attaching fern plant to prothallus.
- Foramen**, an aperture.
- Forbesia** Eckl. (*Curculigo* p.p. BH.). Amaryllid. (III). 6 Afr.
- Forbidden fruit** (W.I.). *Citrus aurantium* L. var. *paradisi*.
- Forchhammeria** Liebm. Capparidaceae (III). 3 Mex., W.I.
- Forcipella** Baill. Acanthaceae (IV. B). 1 Madag.
- Forcipella** Small (*Siphonochia* EP.). Caryophyll. (I. 4). 1 N. Am.
- Fordia** Hemsl. Leguminosae (III. 6). 1 S. China.
- Fordiophyton** Stapf. Melastomaceae (I). 2 S. China.
- Forest**, a close assemblage of trees, allowing no break in the overhead canopy; homogeneous (of one sp.), or diversified; **-oak**, *Casuarina*.
- Forestiera** Poir. Oleaceae. 15 Am., W.I.
- Forficaria** Lindl. Orchidaceae (II. 1). 1 S. Afr.
- Forgesia** Comm. ex Juss. Saxifragaceae (V). 1 Bourbon.
- Forget-me-not**, *Myosotis*.
- Fork-veined**. veins forking into two, as in ferns.
- Forms of vegetation**. groups of pl., of various fams., presenting a general resemblance in external habit, often correlated with resemblance in conditions of life, e.g. trees, epiphytes, &c.
- Formula, floral**, see Floral formula.
- Forrestia** A. Rich. Commelinaceae. 10 palaeotrop.
- Forsellesia** Greene (*Glossopetalon* A. Gray). Celastr. 4 N. Am.
- Forskohlea** L. Urticaceae (5). 5 Medit. to India.

- Forstera** L. f. (*Phyllachne* p.p. *EP.*). Stylidiaceae. 4 Tasm., N.Z.
- Forsteronia** G. F. W. Mey. Apocynaceae (II. 2). 30 trop. Am., W.I.
- Forsythia** Vahl. Oleaceae. 2 China. Cult. orn. fl. shrubs.
- Forsythiopsis** Baker. Acanthaceae (IV. A). 2 Madag.
- Fortunearia** Rehder et Wilson. Hamamelidaceae. 1 China.
- Fortunella** Swingle (*Citrus* p.p.). Rutaceae (V). 4 E. As. (cumquats).
- Fortuynia** Shuttl. ex Boiss. Cruciferae (2). 2 Persia, Afghanistan.
- Fothergilla** Murr. Hamamelidaceae. 2 Atl. N. Am. (Am. witch elder), Cashmir. Fl. apert., $A \infty$.
- Fouquieria** H. B. et K. Fouquieriaceae. 5 warm N. Am., incl. *F. splendens* Engelm. (ocotilla, coach-whip), used for hedges. Shrubs with deciduous l., the midribs persistent and thorny, and showy fl. in racemes, &c., $\frac{8}{8}$, reg., 5-merous. C (5), A 10—15, $\underline{G}$ (3) with 4—6 ov. on plac. in middle of ventral side. Fr. spherical, 3-loc.; seeds with long hairs or wings.
- Fouquieriaceae** (*EP.*; *Tamaricaceae* p.p. *BH.*). Dicots. (Archichl. Parietales). Only gen. *Fouquieria* (*q.v.*).
- Fourcroya** Spreng = *Furcraea* Vent. (Amaryllid.).
- Four-o'clock**, *Mirabilis jalapa* L.
- Fourniera** Scribner. Gramineae (3). 1 Mexico.
- Fournieria** Van Tiegh. (*Cespedesia* *EP.*). Ochnaceae. 1 C. Am.
- Foveolaria** Ruiz et Pav. Styraceae. 1 Peru.
- Fowl-meadow grass** (Am.), *Poa*, *Glyceria*.
- Fox-glove**, *Digitalis purpurea* L.; **-grape**, *Vitis Labrusca* L.; **-tail grass**, *Alopecurus pratensis* L., (Am.) *Spartina patens* Muhl.
- Fragaria** (Tourn.) L. Rosaceae (III. 2). 10 *, Chili. *F. vesca* L. (wild strawberry), Brit. Veg. repr. by runners is well shown. Fl. protog. (class AB), with epicalyx. Fr. of a number of achenes (the so-called seeds) upon a fleshy recept. The fl. bends down after fert., while the fr. ripens. In Am. the cult. forms tend to become dioec. or polyg. Several sp. cult. for the ed. fr.
- Franchetia** Baill. Hamamelidaceae. 1 Madag.
- Franciscea** Pohl = *Brunfelsia* L. p.p. (Solan.).
- Francoa** Cav. Saxifragaceae (II). 2 Chili. Cult. orn. fl. (wedding flower).
- Frangipani**, *Plumeria*.
- Frangula** Tourn. ex Hall. = *Rhamnus* L. p.p. (Rhamn.).
- Frangulinae** (Warming), the 16th order of Choripetalae.
- Frankenia** L. Frankeniaceae. 32 sea-coasts, temp. and subtrop. *F. laevis* L., sea-heath, in Brit. Halophytes with inrolled hairy l. (*cf.* *Empetrum*).
- Frankeniaceae** (*EP.*, *BH.*). Dicots. (Archichl. Parietales; Caryophyllinae *BH.*). 4 gen., 60 sp. of salt-loving plants, trop. and temp. herbs with jointed stems; l. opp., inrolled, exstip. (?). Fls. in dichasia, $\frac{8}{8}$, reg. $\bar{K}$ (4—7), C 4—2, A usu. 6 in two whorls, sta. slightly united at base; $\underline{G}$ usu. (3), 1-loc. with parietal plac., only the lower parts of which bear ovules; ov. ∞ anatr., ascending; style forked. Caps. loculic. Mealy endosp.; embryo straight. *Chief genera*: *Frankenia*, *Niederleinia*. Closely related to *Tamaricaceae* and *Guttiferae*; the agreement with *Caryophyllaceae*, near to which it is sometimes placed, *e.g.* by *BH.*, is more in habit than in structure.

- Frankincense**, *Boswellia-Carteri* Birdw.; -**pine**, *Pinus Taeda* L.
- Franklandia** R. Br. Proteaceae (1). 2 W. Austr.
- Franseria** Cav. Compositae (5). 16 Am.
- Frantzia** Pittier. Cucurbitaceae (4). 2 C. Am.
- Frasera** Walt. (*Swertia EP.*). Gentianaceae (1. 3). 8 N. Am.
- Fraunhofer** Mart. Celastraceae. 1 Brazil.
- Fraxinus** Tourn. ex L. Oleaceae. 50 sp. esp. N. Am., E. As., and Medit. *F. excelsior* L., ash, in Brit. Serial accessory buds in axils. Has large pinnate l. with grooved petioles. Water is said to enter this groove and be absorbed by the l.; the hollow is usu. inhabited by acarids, forming a *domatium*. The fls. appear before the l. in densely crowded short racemes. Each ♂ consists merely of 2 sta. ⊥ 2 cpls., and is anemoph. ; but polygamy is the rule in this sp. and every possible combination of the three types of fl. (♀, ♂, ♀) occurs in various places, sometimes all on one tree, or two on one and one on another, and so on. Fr. a samara or one-seeded nut with terminal wing aiding in wind distr. *F. Ornus* L., the 'flowering ash' of S. Eur., has K and C. The firm elastic wood of the ash is valuable.
- The weeping ash is a variety propagated veg. from a single tree which appeared as a sport at Wimpole in Cambridgeshire.
- Free**, not ad- nor con-nate.
- Free-central placenta**, one running up through centre of a 1-loc. ovary, which looks like a multi-loc. ov. that has lost its septa. Cf. *Primulaceae* (diagram), *Caryophyllaceae*.
- Freerea** Merrill. Icacinaceae. 1 Phil. Is.
- Freesia** Klatt. Iridaceae (III). 3 Cape Col. Cult. orn. perf. fl.
- Fregea** Reichb. f. Orchidaceae (II. 7). 1 C. Am.
- Fremontia** Torrey. Sterculiaceae. 1 California.
- French bean**, *Phaseolus vulgaris* L.; -**honeysuckle**, *Hedysarum*; -**jubes**, *Zizyphus*; -**marigold**, *Tagetes*; -**rye-grass**, *Arrhenatherum avenaceum* Beauv.; -**weed**, (W.I.), *Commelina*.
- Frenela** Mirb. = *Callitris* Vent. p.p. (Conif.).
- Frerea** Dalz. Asclepiadaceae (II. 3). 1 S. India.
- Fresenia** DC. Compositae (3). 3 S. Afr.
- Freycinetia** Gaudich. Pandanaceae. 50 Ceylon to N.Z. and Polynes., usu. climbing shrubs with infl. and fl. like Pandanus. The bracts are fleshy and usu. brightly coloured. In Java, Burck observed pollination effected by a bat (*Pteropus edulis*) which devoured the coloured bracts; in so doing it received pollen upon its head and carried it to the ♀ fl. Fr. a berry, not, as in Pandanus, a drupe.
- Freyeria** Reichb. (*Biasoletia EP.*, *Chaerophyllum* p.p. *B.H.*). Umbelliferae (III. 2). 6 Medit.
- Freylinia** Colla. Scrophulariaceae (II. 4). 2 S. Afr.
- Freziera** Sw. ex Willd. (*Eurya* p.p. *EP.*). Theaceae. 10 trop. Am.
- Fridericia** Mart. Bignoniaceae (1). 1 S. Brazil.
- Friedlandia** Cham. et Schlechtd. = *Diplusodon* Pohl (Lythr.).
- Frijole**, *Phaseolus vulgaris* L.
- Frijolite**, *Sophora*.
- Fringe-tree** (Am.), *Chionanthus*.
- Fritillaria** (Tourn.). Liliaceae (v). 50 N. temp. *F. Meleagris* L.

(snake's head) Brit. Large nectaries at base of P. The bud stands erect and so does the caps., but the open fl. is pend. *F. Imperialis* L. (Crown Imperial) and others cult. orn. fl.

Fritillary, *Fritillaria*.

Fritzschia Cham. Melastomaceae (1). 3 Brazil.

Froelichia Moench. Amarantaceae (3). 10 warm Am. Fr. enclosed in the P, which forms two wings.

Frog-bit, *Hydrocharis*; -**orchis**, *Habenaria* (*Coeloglossum*) *viridis* R. Br.

Frommia H. Wolff. Umbelliferae (III. 5). 1 Nyassaland.

Frondous, **frondose**, leafy.

Fropiera Bouton ex Hook. f. (*Psiloxylon* p.p. *EP.*). Flacourtiaceae (inc. sed.) (Myrtaceae *BH.*). 1 Mauritius.

Froriepla C. Koch (*Carum* p.p. *BH.*). Umbelliferae (III. 5). 1 W. As.

Frost-weed (Am.), *Helianthemum*.

Fruit, the product of that process of growth initiated by the act of fert.; *true fr.* is the product of ovary only, *false fr.* or *pseudocarp* of ovary with any other organ that developes. *Simple fr.* where the fl. gives one indivisible fr.; *aggregate* where several similar fr. come from one fl., as in raspberry, buttercup, Ochna, Rubus, &c.; *multiple* or *collective*, where several fl. combine to give one fr., as in fig, mulberry, plane. They may be *dry* or *fleshy*, may open (*dehiscent*), or not (*indehiscent*): some, called *schizocarps*, break up into one-seeded portions (*mericarps*).

Dry indeh. fr. are divided into *achenes* and *nuts*, the former defined as the product of one, the latter of > one cpl.; but in practice the large are nuts, the small achenes. True achenes in Ranunculus, Potentilla, &c., but the name is also given to the fr. of Compositae, Gramineae (this variety, with pericarp and testa united, is sometimes called a *caryopsis*), Labiatae, &c. True nuts, from sup. ov., in Betulaceae, but the term is applied to the large one-carpelled fruit of Anacardium, &c. A var. of achene or nut is the winged one-seeded indeh. *samara* of ash, elm, Banisteria, Liriodendron, Ptelea, Seguieria, Ventilago, &c.

Schizocarps various, e.g. the *lomentum* of many Leguminosae (a pod constricted between seeds, breaking into one-seeded portions), the schizocarps of Euphorbiaceae, Geraniaceae, Malpighiaceae, many Malvaceae, Sapindaceae, Umbelliferae.

Dry dehisc. fr. of several kinds, esp. the *follicle*, *legume*, and *capsule*. Follicle of one cpl., dehisc. along ventral side only, Aconitum, Asclepiadaceae, Apocynaceae, Crassulaceae. Legume similar but dehisc. along both sides, as in most Leguminosae. Dry fr. of > 1 cpl. are capsules, but special forms have special names, e.g. the pod-like *siliqua* of Cruciferae, the *pyxis* of Anagallis, &c. (capsule opening by a lid split off by *circumscissile* dehiscence), and others. The way in which it dehisces is of systematic importance. It usu. splits from apex down. If the splits, as in Epilobium, Iris, &c., run down the midrib of each cpl., the dehisc. is *loculicidal*: if, as in Hypericum, the fr. breaks into its component cpls., leaving the placental axis standing, it is *septicidal*; if the outer wall of the fr. breaks away, leaving the septa standing, it is *septifragal*. The portions into which the fr. splits are termed *valves*. In some Campanulas,

Papaver, &c., the dehiscence is *porous*, little openings forming in the pericarp.

The commonest fleshy fr. are the *berry* and *drupe*. The former contains no hard part but the seeds; these are surrounded by fleshy tissue and there is a firmer skin (*epicarp*) on the outside. Berries may be derived from sup. ovaries, as in *Berberis*, *Solanum*, *Vitis*, &c. or inf., as in *Ribes*, *Vaccinium*, &c. In rare cases the berry dehisces, *Akebia*, *Myristica*, or is constricted between the seeds, *Maerua*, *Unona*. The drupe (*e.g.* cherry) has a skin (*epicarp*) on the surface, then a fleshy mass of tissue (*mesocarp*) and a hard shell or stone (*endocarp*), all forming part of the pericarp; within the stone is the seed or kernel, usu. without a hard coat. Drupes from sup. ovaries occur in *Prunus*, &c., from inf. in *Cornaceae*, *Juglans*, &c. There may be one stone or *pyrene* (*Prunus*) or several (*Cornus*).

Other fleshy fr. are the *pome* of *Pyrus*, &c. in which the fleshy receptacle encloses, and is united to, the core or product of the G proper; the *pepo* or gourd of *Cucurbitaceae*, *e.g.* cucumber (a variety of the berry with hard epicarp), the peculiar pseudo-berry of *Juniperus* (*q.v.*) &c., the fr. of strawberry (fleshy recept. bearing achenes), rose (fleshy recept. enclosing achenes), *Anacardium* (fleshy recept. bearing nut), *Gaultheria* (caps. enclosed in fleshy calyx), *Urera*, &c. (achene in fleshy perianth), and so on. Aggregate fleshy fr. in *Anonaceae* (berries), *Rubus* (drupes), &c. Multiple fleshy fr. frequent in *Moraceae* (*e.g.* mulberry, fig, bread-fruit), *Ananas*, *Anona*, *Carludivica*, &c.

The style and stigma often fall away as the fr. ripens, but frequently remain in a $\pm$ shrivelled or in an enlarged condition. Sometimes the style forms a hook, as in *Geum*, a plume, as in *Clematis*, or an *awn*, as in *Geraniaceae* (this name is applied to any long thread-like organ on a fruit; *cf.* *Gramineae*).

Other interesting morphological features in fruits: *cf.* *Heterocarpus*, *Aesculus*, *Bertholletia*, *Chenopodium*, *Leontodon*, *Nymphaeaceae*, *Nyctaginaceae*, *Palmae* (*e.g.* *Phytelephas*, *Lodoicea*, &c.), *Pandanaceae*, &c.

Frutex, a shrub; **frutescent**, **fruticose**, shrubby.

Fuchsia (Plum.) L. *Onagraceae* (2). 65 C. and S. Am., N.Z. Many cult. orn. fl. Many show two buds in each axil, one above the other. Fl. suited to bees, humming-birds, &c. Berry ed.

Fuernrohrria C. Koch. *Umbelliferae* (III. 3). 1 Armenia.

Fuertesia Urb. *Loasaceae*. 1 San Domingo.

Fuertesiiella Schlechter. *Orchidaceae* (II. 2). 1 San Domingo.

Fugacious, falling early.

Fugosia Juss. (*Cienfuegosia* EP.). *Malvaceae* (4). 30 Am., Afr., Austr.

Fuirena Rottb. *Cyperaceae* (1). 25 trop. and sub trop.

Fuliginous, sooty.

Fuller's teasel, *Dipsacus fullonum* L.

Fulvous, tawny.

Fumana Spach (*Helianthemum* p.p.). *Cistaceae*. 8 Medit., Eur., W. As.

Fumaria Tourn. ex L. *Papaveraceae* (III). 40 Eur., As., Afr., chiefly

- Medit., 2 in Brit. (fumitory). Many climb by sensitive petioles (*cf.* Clematis). Fl. like Corydalis. *F. capreolata* L. var. *pallidiflora* Jord. (Brit.) shows colour-change in its fl.; before pollination white, it gradually turns pink or carmine (*cf.* Ribes, Diervilla).
- Fumariaceae** (Warming) = § III* of Papaveraceae.
- Fumariola** Korshinsky. Papaveraceae (III). 1 Turkestan.
- Fumitory**, *Fumaria*.
- Funastrum** Fourn. Asclepiadaceae (II. 1). 2 trop. S. Am.
- Funereal cypress**, *Cupressus funebris* Endl.
- Funicle**, the stalk of the ovule; **funiculate** (ovule), stalked.
- Funifera**, Leandr. ex C. A. Mey. Thymelaeaceae. 2 Brazil.
- Funkia** Spreng. (*Hosta* Tratt.). Liliaceae (III). 5 Japan, China. Embryos are formed in the seeds by outgrowth of the nucellus-tissue round the embryo-sac (*cf.* Alchornea). Seeds winged. Cult. orn. fl.
- ✓ **Funtumia** Stapf (*Kickxia* Blume p.p.). Apocynaceae (II. 1). 3 trop. ✓
Afr. *F. elastica* Stapf is the chief source of Lagos or Iré rubber.
- Furcate**, forked.
- Furcraea** Vent. Amaryllidaceae (II). 20 trop. Am. Like Agave; infl. even larger. *F. gigantea* Vent. yields fibre (Mauritius hemp).
- Furcroya** Rafin. = *Furcraea* Vent. (Amaryll.).
- Furfuraceous**, with soft scales.
- Furze**, *Ulex europaeus* L., &c.
- Fusaea** W. E. Safford. Anonaceae (I). 1 Guiana, Venezuela.
- Fusanus** R. Br. Santalaceae. 5 Austr., N.Z.
- Fuscous**, dusky.
- Fusiform**, spindle-shaped.
- Fustic**, *Chlorophora*, *Maclura*, *Zanthoxylum*; **young-**, *Rhus*.
- Gabila** Baill. (*Pycnarrhena* EP.). Menispermaceae. 1 Timor.
- Gabunia** K. Schum. (*Tabernaemontana* p.p.). Apocynaceae (I. 3). 7 W. Afr.
- Gad-bush** (W.I.), *Arceuthobium gracile* Engelm.
- Gaertnera** Lam. Rubiaceae (II. 5). 30 trop. Afr. and As.
- Gagea** Salisb. Liliaceae (IV). 30 N. temp. Old World. *G. lutea* Ker-Gawl. in Brit. Fl. protog. In the l.-axils of some are buds which, if fert. does not occur, develope into bulbils and drop off.
- Gagernia** Klotzsch. Ochnaceae. 1 Guiana.
- Gagnebina** Neck. Leguminosae (I. 4). 1 Mauritius, Madag.
- Gagnepainia** K. Schum. (*Hemiorchis* p.p.). Zingiber. (I). 3 S.E. As.
- Gahnia** Forst. Cyperaceae (II). 35 ✱, esp. Austr.
- Gaiadendron** G. Don (*Loranthus* p.p. BH.). Loranth. (I). 4 Andes, Austr.
- Gaillardia** Foug. Compositae (6). 15 Am. Cult. orn. fl.
- Gaillonia** A. Rich. Rubiaceae (II. 10). 12 Nubia to India.
- Gaimardia** Gaudich. in Freyc. Centrolepid. 3 temp. S. Am., N.Z., Austr.
- Galactia** P. Br. Leguminosae (III. 10). 70 trop. and subtrop. Latex, which is rare in the fam., is found in this plant.
- Galactites** Moench. (*Lupsia* EP.). Comp. (II). 3 Medit., Canaries.
- Galactodendron** Rchb. (-um Kunth) = *Brosimum* Sw. (Morac.).
- Galactoxylon** Pierre (*Bassia* p.p.). Sapotaceae (I). 1 Malay Arch.
- Galagania** Lipsky. Umbelliferae (III. 5). 1 C. As.

Galanthus L. Amaryllidaceae (I). 6 Eur., Medit. *G. nivalis* L. (snowdrop) in Brit. Bulb with 1-fl. scape. P in two whorls. On the inner surface of the inner P-l. are green grooves secreting honey. The bud is erect, but the open fl. pendulous, visited by bees. The sta. dehisce by apical slits and lie close against the style. Each has a process outwards from the anther. The stigma projects and is first touched by an insect; in probing for honey it shakes the sta. and receives a shower of pollen (*cf.* Erica). Autogamy may occur in old fls. The fl. remains open a long time. Cult. orn. fl.

Galapee tree (W.I.). *Sciadophyllum*.

Galarhoeus Haw. = Euphorbia L. p.p. (Euph.).

Galatea, Galatella Cass. = Aster Tourn. p.p. (Comp.).

Galax L. Diapensiaceae. 1 Virginia, Georgia.

Galaxia Thunb. Iridaceae (I). 4 S. Afr.

Galba (W.I.), *Calophyllum Calaba* Jacq.

Galbanum, gum, *Ferula*.

Galbulimima F. M. Bailey. Magnoliaceae. 1 Austr.

Gale, sweet, *Myrica Gale* L.

Galeana La Llave. Compositae (6). 1 Mexico.

Galeandra Lindl. Orchidaceae (II. 5). 7 trop. Am. Epiphytes.

Galearia Zoll. et Morr. Euphorbiaceae (A. II. 5). 12 Indomal.

Galeata Wendl. Inc. sed. 1 Indomal.

Galeate, helmet-shaped.

Galedupa Lam. (*Pongamia* Vent.). Legum. (III. 8). 1 trop. As., Austr.

Galega Tourn. ex L. Leguminosae (III. 6). 3 S. Eur., W. As.
G. officinalis L. sometimes cult. as a fodder-plant (goat's rue).

Galenia L. Aizoaceae (II). 18 S. Afr.

Galeobdolon Adans. = *Lamium* Tourn. p.p. (Labi.).

Galeola Lour. Orchidaceae (II. 2). 10 Malay Archipelago.

Galeopsis L. Labiatae (VI). 7 N. temp. |*. 3 in Brit., incl. *G. Tetrahit* L. (hemp-nettle) with swollen upper ends to internodes, acting as pulvini.

Galeorchis Rydberg (*Orchis* p.p.). Orchidaceae (II. 1). 1 N. Am.

Galeottia A. Rich. (*Zygopetalum* BH.). Orchidaceae (II. 14). 2 Colombia.

Galera Blume (*Epipogon* BH.). Orchidaceae (II. 2). 3 As.

Galingale (Am.), *Cyperus*.

Galiniera Delile. Rubiaceae (I. 8). 1 Abyssinia.

Galinsoga Ruiz et Pav. Compositae (5). 5 Mexico to Argentina.
G. parviflora Cav. now a common weed in Eur. and near Kew.

Galipea Aubl. Rutaceae (I). 6 S. Am.

Galium L. Rubiaceae (II. 11). 220 cosmop.; 10 in Brit. (bed-straw, &c.). Herbs with whorls of l. and stips. (see fam.); fls. in dichasial panicles, small with honey freely exposed (class A) on the epig. disc, usu. protandrous with ultimate self-pollination. *G. Aparine* L. (goose-grass or cleavers; Brit.) is a feeble hook-climber with small reflexed hooks on the stem. The schizocarp is also provided with hooks.

Gallesia Casar. Phytolaccaceae. 1 Peru, Brazil.

Gallitrichum Fourn. = *Salvia* Tourn. (Labiatae).

Gallnuts, *cf.* Myrobalans.

- Galopina** Thunb. Rubiaceae (II. 7). 2 S. Afr.
- Galphimia** Cav. Malpighiaceae (II). 12 warm Am. Cult. orn. shrubs.
- Galpinia** N.E. Br. Lythraceae. 1 Transvaal.
- Galpinsia** Britton (*Oenothera* BH.). Onagraceae. 6 N. Am.
- Galtonia** Decne. Liliaceae (II). 2 S. Afr. Cult. orn. fl. (spire lily).
- Galvesia** Domb. ex Juss. Scrophulariaceae (II. 3). 3 Peru to Calif.
- Galypola** Nieuwland (*Polygala* p.p.). Polygalaceae. 1 U.S.
- Gama grass** (Am.), *Tripsacum*.
- Gambeya** Pierre (*Chrysophyllum* p.p. EP.). Sapot. (I). 5 trop. Afr., Am.
- Gambir**, *Uncaria Gambier* Roxb.
- Gamblea** C. B. Clarke. Araliaceae (I). 1 Sikkim.
- Gamboge**, *Garcinia Morella* Desr., &c.
- Gamete**, a sexual reproductive cell.
- Gametophyte**, the sexual generation.
- Gamo-** (Gr. prefix), united; **-petalae** (BH.), Sympetalae; **-petalous**, **-phyllous**, **-sepalous**, with concrescent C, P, K; **-tropic** (movement), before fert.
- Gamocarpha** DC. = *Boopis* Juss. (Calycer.).
- Gamogyne** N.E. Br. Araceae (v). 2 Malaya.
- Gamolepis** Less. Compositae (8). 12 S. Afr.
- Gamopoda** Baker. Menispermaceae. 1 Madag.
- Gamosepalum** Hausskn. Cruciferae (4). 2 W. As. Gamosepalous.
- Ganja**, *Cannabis sativa* L.
- Ganophyllum** Blume. Sapindaceae (II) (*Bursera* BH.). 1 Phils. to Austr.
- Ganua** Pierre ex Dubard (*Illipe* p.p.). Sapot. (I). 6 Malaya.
- Ganymedes** Salisb. = *Narcissus Tourn.* p.p. (Amaryll.).
- Garapatica** Karst. (*Alibertia* BH.). Rubiaceae (I. 8). 1 Colombia. Fr. ed.
- Garberia** A. Gray. Compositae (2). 1 Florida.
- Garcia** Rohr. Euphorbiaceae (A. II. 3). 1 trop. Am.
- Garcilassa** Poepp. et Endl. Compositae (5). 1 Peru.
- Garcinia** L. Guttiferae (v). 200 palaeotrop. trees or shrubs with leathery l. Sta. free or united into bundles or into a common mass. Berry; seed arillate. The resin of *G. Morella* Desr. and other sp., obtained by cutting notches in the stem, forms gamboge. The fr. of many is ed., esp. that of *G. Mangostana* L. (mangosteen), the aril of the seed of which is a delicacy. Some yield useful timber.
- Gardenia** Ellis. Rubiaceae (I. 8). 80 palaeotrop., largely cult. orn. perf. fl. Some sp. have apparently whorls of leaves, 3 in each, really a case of condensation of two whorls of 2 into one with extreme anisophyly of one whorl; the fourth l. is reduced to a minute scale. The stipules of many secrete a resinous fluid.
- Gardeniopsis** Miq. Rubiaceae (II. 4). 1 Sumatra, Borneo.
- Gardneria** Wall. ex Roxb. Loganiaceae. 3 India to Japan.
- Gardoquia** Ruiz et Pav. (*Satureia* p.p. EP.). Labiatae (VI). 30 W. Am.
- Garget** (Am.), *Phytolacca*.
- Garhadiolus** Jaub. et Spach (*Rhagadiolus* BH.). Comp. (13). 4 W. As.
- Garidella** Tourn. ex L. = *Nigella* L. (Ranunc.).
- Garjan oil**, *Dipterocarpus*.

- Garlic**, *Allium ursinum* L., &c.; -pear tree (W.I.), *Crataeva gyna* L.; -shrub (W.I.), *Bignonia alliacea* Lam.
- Garnieria** Brongn. et Gris Proteaceae (1). 1 New Caledonia.
- Garnotia** Brongn. in Duperr. Gramineae (8). 15 Indomal., China.
- Garnotiella** Stapf. Gramineae (8). 1 Phil. Is.
- Garretia** Welw. (*Khaya* EP.). Meliaceae (11). 1 trop. Afr.
- Garrya** Dougl. ex Lindl. Garryaceae. 15 N. Am., W.I. Shrub with 4-angled twigs and opp. evergr. l. Fl. in catkin-like panicle 3 in axil of each bract, unisexual. ♂ P 4, A 4; ♀ naked, G (2—3) uniloc. with 2 ovules. Fr. with thin pericarp and 1—2 seeds. Endosperm. Cult. orn. shrubs.
- Garryaceae** (EP.; *Cornaceae* p.p. BH.). Dicots. (Archichl. Garryales). Only genus *Garrya*, q.v.
- Garryales**. The 4th order of Dicots. Archichlamydeae.
- Garuga** Roxb. Burseraceae. 6 Indomal.
- Garugandra** Griseb. (*Gleditschia* p.p. EP.). Leguminosae (11. 7) (Anacardiaceae, BH.) 1 Argentina.
- Garuleum** Cass. Compositae (9). 5 S. Afr.
- Gaslondia** Vieill. (*Syzygium* p.p. EP.). Myrtaceae (1). 1 New Caled.
- Gasparillo** (W.I.), *Esenbeckia*.
- Gasteria** Duval. Liliaceae (11). 35 S. Afr. Xero. with succulent leaves closely packed together, but often in the shade of long grass.
- Gastonia** Comm. ex Lam. Araliaceae (1). 5 Madag., Masc.
- Gastranthus** Moritz ex Benth. et Hook. f. Acanth. (IV B). 1 Venezuela.
- Gastridium** Beauv. Gramineae (8). 2 Medit.
- Gastrochilus** Wall. Zingiberaceae (1). 2 Himal., Burmah.
- Gastrocotyle** Bunge. Boraginaceae (IV. 2). 1 Egypt to Panjab.
- Gastrodia** R. Br. Orchidaceae (11. 2). 12 India to N.Z.
- Gastroglottis** Blume (*Liparis* p.p.). Orchidaceae (11. 4). 2 Peru.
- Gastrolepis** Van Tiegh. Icacinaceae. 1 New Caledonia.
- Gastrolobium** R. Br. Leguminosae (111. 2). 35 W. Austr.
- Gatesia** A. Gray. Acanthaceae (IV. B). 1 U.S.
- Gaub tree**, *Diospyros Embryopteris* Pers.
- Gaudichaudia** H. B. et K. Malpighiaceae (1). 15 Mexico to Venezuela. Mericarp elevated on carpophore formed from wing of cpl.
- Gaudinia** Beauv. Gramineae (9). 2 Medit.
- Gaultheria** Kalm. ex L. Ericaceae (11. 2). 100 sp. Am., Japan to Himal. and Tasmania. The fruit resembles a berry, but is really a capsule, enclosed in the fleshy calyx but not adhering to it. *G. procumbens* L. (winter green, checker-berry or partridge-berry U.S.). *G. Shallon* Pursh (sallal, shallon, N.W. Am.). Winter green oil is distilled from the pl. of some sp.
- Gaura** Linn. Onagraceae (2). 25 N. Am. The anthers are chambered up by horizontal septa in each loc. (cf. *Circaea*). Nut.
- Gaurella** Small (*Oenothera* p.p.). Onagraceae (2). 2 N. Am.
- Gauropsis** Presl (*Clarkia* p.p. EP.). Onagraceae (2). 1 Mexico.
- Gaussia** H. Wendl. Palmaceae (IV. 1). 1 Cuba.
- Gauze tree** (W.I.). *Lagetta*.
- Gavarretia** Baill. Euphorbiaceae (A. 11. 2). 2 N. Brazil.
- Gaya** H. B. et K. Malvaceae (2). 8 trop. Am.

- Gaylussacia** H. B. et K. Ericaceae (III. 1). 40 Am. (huckleberry).
The 5 loc. of the ovary are made into 10 by partitions growing out from the midribs of the cpls., as in *Linum*.
- Gayoides** Small (*Abutilon* p.p. *EP.*, *Sida* p.p. *BH.*). Malv. (2). 2 N. Am.
- Gayophytum** A. Juss. Onagraceae (2). 6 Chili to Calif.
- Gazania** Gaertn. Compositae (10). 24 Cape Colony. Cult. orn. fl.
- Gean**, *Prunus Avium* L.
- Geanthemum** R. E. Fries. Anonaceae (1). 1 Brazil. Cf. *Anona*.
- Geanthus** Phil. Liliaceae (IV). 2 Chili.
- Gearum** N.E. Br. Araceae (VII). 1 Goyaz.
- Geaya** Costantin et Poisson. Ericaceae (IV. 1). 1 Madag.
- Geigeria** Griesselich. Compositae (4). 30 S. and trop. Afr.
- Geijera** Schott. Rutaceae (1). 5 E. Austr.
- Geissanthera** Schlechter. Orchidaceae (II. 20). 1 New Guinea.
- Geissanthus** Hook. f. Myrsinaceae (II). 25 equatorial S. Am.
- Geissaspis** Wight et Arn. Leguminosae (III. 7). 8 trop. Afr., As.
- Geissois** Labill. Cunoniaceae. 6 Austr. to Fiji.
- Geissolepis** Robinson. Compositae (5). 1 Mexico.
- Geissoloma** Lindl. ex Kunth. Geissolomataceae. *G. marginatum* Kunth, Cape Col., a small xero. shrub, the only sp. L. opp. evergr., with sol. axillary fls., ♂. K 4, C 0, A 4 + 4, G (4) each with 2 pend. ov. Caps. 4-loc. Endosp.
- Geissolomataceae** (*EP.*; *Penaeaceae* p.p. *BH.*). Dicots. (Archichl. Myrtiflorae). Only genus, *Geissoloma*, *q.v.*
- Geissomeria** Lindl. Acanthaceae (IV. B). 10 trop. Am.
- Geissopappus** Benth. Compositae (6). 3 trop. S. Am.
- Geissorhiza** Ker. Iridaceae (III). 40 S. Afr., Madag. Cult. orn. fl.
- Geissospermum** Allem. Apocynaceae (I. 3). 2 trop. Brazil. *G. laeve* Baill. has offic. bark, cortex Pereirae.
- Geissostegia** Benth. = *Erica* Tourn. (*Eric.*).
- Geitonogamy**, pollination from another fl. on same pl.
- Geitonoplesium** A. Cunn. Liliaceae (x). 2 E. Austr.
- Gelasine** Herb. Iridaceae (II). 2 temp. S. Am.
- Geleznovia** Turcz. Rutaceae (1). 3 W. Austr.
- Gelonium** Roxb. Euphorbiaceae (A. II. 6). 15 warm As., Afr., Madag.
- Gelsemium** Juss. Loganiaceae. 2 N. Am., As. *G. sempervirens* Ait. (Carolina jasmine) cult. The peduncle bears numerous bracteoles.
- Geminate**, in pairs.
- Gemmae**, buds, *Hymenophyllaceae*.
- Gendarussa** Nees = *Justicia* L. p.p. (*Acanth.*).
- General**, used in sense opposed to partial.
- Generations**, alternation of, *Pteridophyta*.
- Generic name**, see Nomenclature.
- Genetyllis** DC. = *Darwinia* p.p. (*Myrt.*).
- Genianthus** Hook. f. (*Secamone* p.p. *EP.*). Asclepiad. (II. 2). 4 Indomal.
- Geniculate**, bent sharply.
- Geniosporum** Wall. ex Benth. Labiatae (VII). 15 Afr., Madag., Indomal.

Geniostemon Engelm. et Gray. Gentianaceae (I). 2 Mexico.

Geniostoma Forst. Loganiaceae. 25 Madag. to N.Z.

Genip tree (W.I.), *Melicocca*, &c.

Genipa (Tourn.) L. Rubiaceae (I. 8). 2 warm Am., W.I.

Genista L. Leguminosae (III. 3). 90 Eur., N. Afr., W. As.; 3 in Brit. *G. anglica* L. (needle-gorse or petty whin) has large thorns (branches). The fl. has an explosive mechanism, typical of many of the fam. (*g.v.*). In *G. tinctoria* L., the dyer's greenweed (Müller's *Fert. of Fls.* p. 189), there is no honey; the style and tube of sta. are enclosed in the keel, which is united along the top seam as well as the bottom. The sta. shed their pollen almost in the apex of the keel, but not so near it as to pollinate the stigma. When the fl. opens there is a tension of the sta.-tube on the lower side tending to bend it upwards; this is resisted by an opposite one in the keel and wings, but if an insect alight on the wings and press them down, the upper seam of the keel gives way and an explosion follows. In it the style flies out, striking the under side of the insect, thus probably becoming cross-pollinated, and is followed by a shower of pollen which gives the insect a fresh coating to take to another fl.

A yellow dye is obtained from the fls. of this sp., which when mixed with woad gives a fine green (Kendal green).

Genlisea A. St Hil. Lentibulariaceae. 12 trop. Am. and Afr.

Gentian, *Gentiana*.

Gentiana Tourn. ex L. Gentianaceae (I). 350 cosmop. exc. Afr., chiefly alpine; 5 (gentian) in Brit. Most are alpine pl. of tufted growth. Fls. of interest (see *Nat. Pfl.*, Müller's *Fert. of Fls.*, *Alpenblumen*, &c.). The genus shows an ascending series of fls., adapted to higher and higher types of insects. *G. lutea* L. is a primitive type, with freely exposed honey, yellow homogamous fl. and short-tongued visitors. *G. purpurea* L., *G. Pneumonanthe* L. (Brit.), &c. are blue long-tubed humble-bee fls. *G. verna* L. (Brit.), *G. Amarella* L. (Brit.) and *G. campestris* L. (Brit.) are long-tubed butterfly fls., sometimes protandr.

The gentians form one of the most striking features of the flora of the Alps, occurring in large masses and with very conspicuous fls.; *G. acaulis* L. is the most beautiful. In the Brit. Mts. they are rare. The root of *G. lutea* furnishes a tonic.

Gentianaceae (EP., BH.). Dicotyledons (Sympet. Contortae; Gentianales BH.). 80 gen., 800 sp. in every part of the globe and in great variety of situations—arctic and alpine pl., halophytes, saprophytes (*Voyria*, &c.), marsh pl. (*Menyanthes*, &c.), water pl. (*Limnanthemum*), &c. They are mostly herbaceous (often perennial); a few shrubs. The perennial herbs have usu. a rhizome. L. opp., exstip., usu. entire. The infl. is usu. a dichasial cyme like Caryophyllaceae; as in that fam., the lat. branches often become monochasial. Other cymose infls. also occur. Bracts and bracteoles present or not. Fls. reg., ♀, 4–5-merous (rarely more). K usu. (5), imbr.; C (5), bell- or funnel-shaped, or sometimes salver-shaped, conv. (exc. *Bartonia*, *Obolaria*, &c., and § 11); A as many as petals, alt. with them, epipet.; anthers various, usu. introrse; G with a glandular disc at base, (2), placed in the antero-posterior plane.

Placentae usu. parietal, but they commonly project far into the cavity and spread out at their ends; occasionally the ovary is 2-loc. with axile plac.; ovules usu. ∞ , anatr.; style simple; stigma simple or 2-lobed. Fr. usu. a septicidal caps. with ∞ seeds rarely a berry (*Chironia*, &c.); seeds small; embryo small, in abundant endosp.

The flowers of *G.* are insect-fertilised. The genus *Gentiana* has been very fully studied; see also *Menyanthes* (dimorphic).

Classification and chief genera (after Engler):

- I. *GENTIANOIDEAE* (l. opp.: C conv. or imbr.): *Exacum*, *Erythraea*, *Chlora*, *Gentiana*, *Swertia*.
- II. *MENYANTHOIDEAE* (l. alt.; C induplicate-valvate): *Menyanthes*, *Limnanthemum*.

Gentianales (*BH.*) The 7th cohort of Gamopetalae.

Gentianella Moench. = *Gentiana* Tourn. p.p. (*Gent.*).

Gentilia A. Chevalier et Beille. *Euphorbiaceae* (A. I. 2). 2 trop. Afr.

Genus, see Nomenclature.

Genyorchis Schlechter. *Orchidaceae* (II. 16). 3 trop. Afr.

Geo- (Gr. prefix), earth-; **-carpic**, producing subterranean fr., *Amphicarphaea*, *Arachis*, *Cardamine*, *Trigonella*, *Voandzeia*; **-graphical distribution**, cf. textbooks; **-philous**, geocarpic; **-tropism**, irritability to gravity.

Geobalanus Small. *Rosaceae* (VI). 2 Florida.

Geocardia Standley = *Geophila* D. Don (*Rubiaceae*).

Geocarpon Mackenzie. *Aizoaceae* (II). 1 Missouri.

Geocharis Ridl. *Zingiberaceae* (I). 2 Malaya.

Geochorda Cham. et Schlecht. *Scrophulariaceae* (II. 6). 1 warm S. Am.

Geococcus J. Drumm. ex Harv. *Cruciferae* (4). 1 N.W. Austr.

Geodorum Jacks. *Orchidaceae* (II. 10). 10 Indomal.

Geoffraea L. *Leguminosae* (III. 8). 4 trop. Am.

Geoffraya Bonati. *Scrophulariaceae* (II. 6). 1 Cambogia.

Geomitra Becc. (*Bagnisia* p.p. *EP.*). *Burmanniaceae*. 2 Borneo.

Geonoma Wild. *Palmae* (IV. 1). 85 trop. Am.

Geopanax Hemsl. *Araliaceae* (I). 1 Seychelles.

Geophila D. Don. *Rubiaceae* (II. 5). 15 trop.

Geoprumnon Rydberg (*Astragalus* p.p. *EP.*). *Leguminosae* (III. 6). 6 N. Am.

Georchis Lindl. = *Goodyera* R. Br. (*Orchid.*).

Georgina Willd. = *Dahlia* Cav. (*Comp.*).

Geosiris Baill. *Burmanniaceae*. 1 Madag.

Geostachys Ridl. *Zingiberaceae* (I). 5 Malaya.

Geracium Reichb. = *Crepis* Vaill. p.p. (*Comp.*).

Geraniaceae (*EP.*; *BH.* incl. *Oxalidaceae*, *Limnanthaceae*, *Tropaeolaceae*, *Balsaminaceae*). Dicot. (Archichl. *Geraniales EP.*, *BH.*).

11 gen., 650 sp., cosmop., mostly herbs, often hairy; *Sarcocaulon* fleshy. Fl. usu. reg., $\bar{\sigma}$, 5-merous. K 5, imbr. with valvate tips, persistent; C 5, imbr. or conv.; A as many or 2 or 3 times as many as petals, united at base, obdipl. when > 1 whorl, anther usu. versatile; G (5) or (2—3) or (3—5), with 1—2 or 2— ∞ ovules in each on axile plac.; ovules usu. pend. with ventral raphe and micropyle facing upwards; style long with 5 stigmas. Fls. usu. protandr. Fr. usu. a

schizocarp, the cpls. splitting off from a central beak (the persistent style); each takes with it a strip of the tissue of the style, forming an *awn*, which is usu. hygroscopic (*cf.* *Geranium*, *Erodium*). Embryo straight or folded, in endosp. *Chief genera*: *Geranium*, *Erodium*, *Pelargonium*, *Sarcocaulon*. [**BH. chars.** Herbs with alt. or opp. l. Fl. $\frac{5}{5}$, reg. or $\frac{1}{1}$. Recept. hardly disc-like, often with 5 glands alt. to C. K 5 or less, C 5 or less, or 0, imbr., rarely conv.; A twice as many as K, often $\pm$ connate, G (3—5, rarely 2), multiloc.; ovule 1—2 per loc., pend. or not, raphe various. Caps., schizocarp, or rarely berry. Endosp. little or 0.]

Geraniales. The 23rd order (Engler) of Dicots. (Archichl.). The 7th cohort (*BH.*) of Polypetalae.

Geranium (Tourn.) L. Geraniaceae. 200 cosmop., esp. temp. (12 in Brit., incl. *G. pratense* L., meadow cranesbill, and *G. Robertianum* L., herb Robert). Infl. cymose, either dich. with cincinnus-tendency (by preference of the β -bracteole), or a cincinnus alone, which is straightened out into a sympodium. The nectaries are at the base of the sta. These stand at first round the undeveloped style; after dehiscence they move away, and finally the stigmas open. The fr. explodes, the awn twisting up so that the cpls. are carried up and outwards. In many sp. they open at the same time and the seeds are shot out. The *G.* of greenhouses is really a *Pelargonium*.

Geranium (of greenhouses), *Pelargonium*; -grass, -oil, *Cymbopogon*.

Gerardia L. Scrophulariaceae (III. 2). 40 Am.

Gerardiina Engl. Scrophulariaceae (III. 2). 1 trop. Afr.

Gerardiopsis Engl. (*Anticharis* Endl.). Scrophular. (I. 2). 1 trop. Afr.

Gerascanthus P. Br. = *Cordia* L. p.p. (Borag.).

Gerbera Gronov. Compositae (12). 35 Afr., As. Cult. orn. fl.

Germainia Bal. et Poitr. (*Anthistiria* p.p. *BH.*). Gram. (2). 2 S.E. As.

German pellitory, *Anacyclus*.

Germander, *Teucrium*.

Germen, the ovary.

Germination, *cf.* *Acacia*, *Cucurbita*, *Streptocarpus*, *Ulex*, *Vivipary*.

Gerontogaeous, Old World.

Geropogon L. = *Tragopogon* Tourn. (Comp.).

Gerrardanthus Harv. ex Benth. et Hook. f. Cucurbitaceae (1). 4 trop. Afr.

Gerrardiana Oliver. Flacourtiaceae (9) (Samydaceae, *BH.*). 1 S. Afr.

Gertrudia K. Schum. Flacourtiaceae (3). 1 New Guinea.

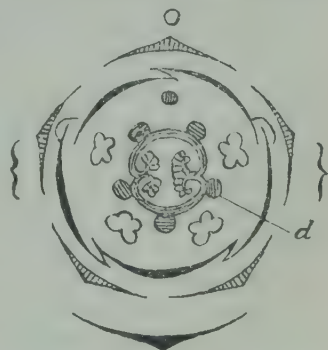
Geruma Forsk. Inc. sed. 1 Arabia.

Gesneria L. Gesneriaceae (11). 50 trop. Am., W.I.

Gesneriaceae (*EP.*, *BII.*). Dicots. (Sympet. Tubiflorae; Personale *BH.*). 85 gen., 1100 sp. trop. and subtrop., mostly herbaceous or slightly woody; shrubs and trees are rare. L. usu. opp., rarely whorled or alt., entire or toothed, never divided, exstip. Some are root-climbers, and amongst these are a few epiphytes, *e.g.* *Aeschynanthus*, usu. with fleshy water-storing l. Many are tuberous, *e.g.* the *Sinningia* (*Gloxinia*) of greenhouses. A number repr. veg. by means of curious runners or suckers, covered with scale-leaves, usu

formed below ground, e.g. *Naegelia*, *Isoloma*, &c. A peculiar morphology and life-history is found in *Streptocarpus* (*q.v.*).

Fls. sol. or in cymose infis. of various types, ♂, usu. markedly ♂. K (5), usu. with very stout teeth, generally valvate; C (5), often 2-lipped, imbr. (in *Ramondia*, &c. it is nearly rotate and reg.); A usu. 4, didynamous, or 2, or 5 (*Ramondia*, &c.), alt. with corolla lobes; stds. often found. At the base of the flower-tube is a disc, whose various shapes form important marks in distinguishing gen.; it may be ring-shaped (thin or thick), 5-angled, 5-lobed, or reduced to 5 or fewer glands. G sup., or ± inf. (see below); always (2), 1-loc. with parietal plac. which sometimes project inwards so far that it becomes imperfectly 2-loc.; ovules ∞, anatropous; style simple; stigma often bilobed. Fr. usu. a caps., splitting loculic. into 2 valves, each of which may again split into 2; sometimes (*Ramondia*) the caps. is septicidal, or opens only at the tip, or the fr. may be ± fleshy or berry-like. Seeds small and numerous, with endosperm (§ II) or without (most of § I). Embryo straight.



Floral diagram of *Gesneria*, after Eichler; *d*=disc-gland.

Fls. mostly protandrous; their large size and bright colours suit them to insects. *Saintpaulia* (*q.v.*), *Klugia*, and others exhibit two types of symmetry on the same plant, the fls. (and usu. the l.) on the left side of the infl. being like the reflections of those on the right (*enantiostyly*).

Germin. interesting, esp. in *Streptocarpus* (*q.v.*). The cots. are epigeal, and usu. thin, one larger than the other and often growing subsequently to some size: buds are often found in their axils. Anisophylly is very common, and usu. alt. on one side and the other.

None of the *G.* are economic plants; many are hothouse favourites. *Classification and chief genera* (after Fritsch):

"The relationships to allied orders, especially Scrophulariaceae, Orobanchaceae and Bignoniaceae, are so close that it is almost impossible to draw the dividing lines. The *B.* are most sharply marked off by the structure and formation of their fruit and seed, and often by their divided leaves. The *O.* might very well be placed in *G.* as a parasitic sub-order. The placentation and structure of the ovary is the chief mark of distinction between the *G.*, *O.*, and *S.*"

I. *CYRTANDROIDEAE* (ovary free, sup.): *Ramondia*, *Saintpaulia*, *Didymocarpus*, *Streptocarpus*, *Aeschynanthus*, *Besleria*, *Cyrtandra*, *Columnnea*.

II. *GESNERIOIDEAE* (ovary more or less inf.): *Achimenes*, *Isoloma*, *Gesneria*.

Gesnouiinia Gaudich. Urticaceae (4). 1 Canaries.

Gestroa Becc. Violaceae. 1 Malaya.

Getah (Malay) = gutta.

Gethyllis Plum. ex L. Amaryllidaceae (1). 10 Cape Col. Some ed. fr.

- Gethyum** Phil. Liliaceae (IV). 1 Chili.
- Geum** L. Rosaceae (III. 2). 40 N. and S. temp., arctic. *G. rivale* L. (water avens) with a thick rhizome and large protog. fls., and *G. urbanum* L. (wood avens) with smaller nearly homogamous fls., in Brit. Both, with many others. have a hook on each achene aiding distr. The style in a newly opened fl. has a Z-like kink in it. The lower half of this after fert. gets larger and more woody, while the upper drops off.
- Geunsia** Blume. Verbenaceae (4). 5 Malay Archipelago.
- Gevuina** (*Guevina*) Molina. Proteaceae (II). 1 Chili. Ed. nut.
- Gherkin**, young fr. of *Cucumis sativus* L.
- Ghiesbreghtia** A. Gray. Scrophulariaceae (I. 1). 1 Mexico.
- Ghikaea** Volkens et Schweinf. Scrophulariaceae (III. 2). 1 trop. Afr.
- Giant bamboo**, *Dendrocaamus*, *Gigantochloa*; -cactus, *Cereus*; -fennel, *Ferula*; -pumpkin, *Cucurbita*; -sugar pine, *Pinus*.
- Gibbesia** Small (*Siphonochia* EP.). Caryophyllaceae (I. 4). 1 N. Am.
- Gibbous**, with projecting broad pouch.
- Gidgee** (Austr.), *Acacia homalophylla* A. Cunn.
- Giesekia** (*Gisekia*) L. Phytolaccaceae. 5 Afr., India.
- Gifdoorn** (S. Afr.), *Sarcocaulon*.
- Gifola** Cass. = *Filago* L. (Comp.).
- Giganthemum** Welw. (*Camoensia* EP.). Leguminosae (III. 1). 1 trop. Afr.
- Gigantochloa** Kurz. Gramineae (13). 10 Indomal. Giant bamboos (*q.v.*), used in Java, &c. for building.
- Gigasiphon** Drake del Castillo (*Bauhinia* p.p.). Leguminosae (II. 4). 1 Madag.
- Gigliolia** Becc. Palmaceae (IV. 1). 2 Borneo.
- Gigliolia** Barb. Rodr. (*Octomeria* EP.). Orchidaceae (II. 6). 2 Brazil.
- Gilgia** Pax. Euphorbiaceae (A. II. 2). 1 Somaliland.
- Gilgiochloa** Pilger. Gramineae (9). 1 E. Afr.
- Gilia** Ruiz et Pav. Polemoniaceae. 120 temp. and subtrop. Am.
- Gilibertia** Ruiz et Pav. Araliaceae (1). 20 trop. Am., As., Japan, Chi.
- Gill** (Am.), *Nepeta Glechoma* Benth.
- Gillbeea** F. Muell. Cunoniaceae. 1 N.E. Austr.
- Gillenia** Moench. Rosaceae (I. 1). 2 N. Am. Cult. orn. fl.
- Gilletiella** De Wild. et Durand. Acanthaceae (II). 1 Congo.
- Gilletia** Rendle (*Anthericopsis* Engl.). Commelinaceae. 1 E. Afr.
- Gilliesia** Lindl. Liliaceae (IV). 3 Chili. Cult. orn. fl.
- Gillflower**, clove, *Dianthus Caryophyllus* L.; wall-, wallflower.
- Gilruthia** Ewart. Compositae (4). 1 W. Austr.
- Gln**, *Juniperus*.
- Ginallloa** Korth. Loranthaceae (II). 4 Indomal.
- Gingelly**, **gingill**, *Sesamum indicum* L.
- Ginger**, *Zingiber officinale* Rosc.
- Gingidium** F. Muell. = *Aciphylla* Forst. (Umbellif.).
- Ginginsia** DC. = *Pharnaceum* L. (Aizo.).
- Ginkgo** L. Ginkgoaceae. 1, *G. biloba* L. (*Salishuria adiantifolia* Sm.), the maidenhair tree, perhaps found wild in W. China, but carefully preserved as sacred in temple gardens. It grows in the open in Eur., reaching 100 feet; l. deciduous in autumn, resembling those of maiden-

hair fern, and very often with a deep median division, *forked* in venation (*cf.* ferns and cycads), scattered on long shoots, or crowded at the apex of short shoots, which sometimes elongate into long. Below the l. on the short shoot are a few scale l. Fls. dioecious, in the axils of the uppermost scales or lowest green l. on a short shoot (position different from that usual in Coniferae with long and short shoots). ♂ a stalked central axis, bearing scattered rather loosely disposed sta., each of which is a slender filament ending in an apical scale and two or more pollen-sacs with longitudinal opening. The pollen grain forms a rudimentary prothallus of a few cells, and the generative nuclei produce two large spirally coiled spermatozoids (*cf.* cycads). The ♀ has the form of a long stalk with two term. elliptical ovules enclosed at the base by a collar-like envelope repres. a reduced carpellary l. Each ov. consists of a nucellus surrounded by one integument, which in the ripe seed forms a thick fleshy aril-like covering round a hard woody shell. In the mature ov. the greater part of the nucellus tissue is reduced to a thin papery layer enclosing a large embryo-sac with usually 2 archegonia. Fert. occurs before or *after* the ovule has fallen from the tree. The embryo has 2 cots.

The seed is edible, and yields an oil, and the timber is useful.

Ginkgo thus represents a very old type, with relationships to the Cycadales and the Filicales. Fossil species are found in the Carboniferous, Permian, Triassic, and Jurassic, and in the Tertiary of England.

For details see Coulter and Chamberlain, *Morphology of Gymnosperms*; Fujii on floral morphology in *Bot. Mag.*, Tokio, 1895; Seward and Gowan in *Ann. Bot.* 1900, p. 108; Ikeno on fertilisation in *Ann. Sci. Nat. Bot.* XIII. 1901, p. 303; Lyon on embryology in *Minn. Bot. Stud.* III. p. 275.

Ginkgoaceae. The only fam. of Ginkgoales, with one gen. Ginkgo (*q.v.*), formerly placed in Coniferae.

Ginkgoales. The 2nd class of Gymnosperms.

Ginora L. (*Ginoria* Jacq.). Lythraceae. 7 Mex., W.I.

Ginseng, *Aralia Ginseng* Baill.

Giorgiella De Wild. Passifloraceae. 1 Congo.

Gipsywort, *Lycopus europaeus* L.

Giraldia Baroni (*Atractylis* p.p. *EP.*). Compositae (II). 1 China.

Giraldiella Damm. Liliaceae (v). 1 China.

Girardinia Gaudich. Urticaceae (I). 6 trop. As., Afr. Stinging hairs.

Gireoudia Klotzsch = *Begonia* L. p.p. (*Begon.*).

Girgensohnia Bunge. Chenopodiaceae (B). 4 W. and C. As.

Gironniera Gaudich. Ulmaceae. 8 Indomal., Polynesia.

Gisekia (*Giesekia*) L. Phytolaccaceae (Aizoaceae *BH.*). 5 trop. Afr. and As.

Githago Adans. = *Lychnis* L. (*BH.*) = *Agrostemma* L. (*Caryoph.*).

Githopsis Nutt. Campanulaceae (I). 1 California.

Giulianettia Rolfe. Orchidaceae (II a. III). 1 New Guinea.

Givotia Griff. Euphorbiaceae (A. II. 5). 1 S. India, Ceylon.

Gjellerupia Lauterbach. Opiliaceae. 1 New Guinea.

Glaber (Lat.), glabrous, hairless.

Glabraria L. = *Litsa* Lam. (Laur.).

Glacial zone, see Zones of Vegetation.

Gladdon, *Iris foetidissima* L.

Gladiate, sword-shaped.

Gladiolus (Tourn.) L. Iridaceae (III). 120 Afr., Eur., As. Fls. often protandrous. L. isobil. Cult. orn. fl.

Gland, an organ secreting fluid, e.g. nectary, oil-gland, water-pore; cf. Insectivorous Pl., Plumbaginaceae, Saxifragaceae; **-ular hair**, a sticky secreting hair, *Cuphea*, &c.

Glandonia Griseb. Malpighiaceae (II). 1 Amazon valley.

Glans (Lat.), a nut.

Glareal, growing on dry exposed ground.

Glass-wort, *Salsola*; (Am., W.I.) *Salicornia*.

Glastonbury thorn, a var. of hawthorn.

Glaucous, becoming sea-green, or $\pm$ sea-green.

Glaucidium Sieb. et Zucc. Ranunculaceae (I). 2 Japan, China.

Glaucium Tourn. ex Hall. Papaveraceae (II). 12 Eur., As. *G. flavum* Crantz, yellow horned-poppy, on sea-shores in Brit.

Glaucotheca O. F. Cook. Palmaceae (I. 2). 1 California.

Glaucous, sea-green, covered with a bloom like a plum.

Glaux (Tourn.) L. Primulaceae. *G. maritima* L., sea milkwort, the only sp., N. temp. coasts (incl. Brit.), a halophyte with fleshy l. The seedling dies after producing in the axil of one cot. a hibernating shoot, with a root of its own. From this fresh plants arise veg., the process being repeated for several years before flowering. Runners with scale l. in whose axils renewal-shoots form appear before the flowering period. The fl. has no C, but a coloured K.

Glaziocharis Taub. ex Warm. Burmanniaceae. 1 Rio de Janeiro.

Glaziophyton Franch. (*Arundinaria* p.p. *EP.*). Gramin. (13). 1 Brazil.

Glaziostelma Fourn. Asclepiadaceae (II. I). 1 Brazil.

Glaziová Bur. Bignoniaceae (I). 1 Brazil. Tendrils with discs at tip (cf. *Parthenocissus*).

Gleadovia Gamble et Prain. Orobanchaceae. 1 Indomal.

Glechoma L. (*Nepeta* L. *BH.*). Labiatae (VI). 6 |*.

Glechon Spreng. Labiatae (VI). 12 Brazil, Paraguay.

Gleditschia Clayton. Leguminosae (II. 7). 11 sub trop. Am., As. Stems usu. with stout branched thorns (stem structures, arising in l. axils). The thorn comes from the uppermost of a series of sub-petiole buds one above the other in the axil. No winter buds form, and the young apex of each twig dies off in winter, the next year's growth starting lat. Some used for hedges; some useful timber.

Glehnia F. Schmidt. Umbelliferae (III. 6). 1 E. As., W. N. Am.

Gleichenia Sm. Gleicheniaceae. 100 trop., *. Creeping rhiz.; l. repeatedly branched in an apparently dichot. way.

Gleicheniaceae. Filicales Leptosporangiatæ. 2 gen., 100 sp., trop., sub trop. and S. temp., small ferns with creeping rhiz. and dichot. branched l. Sorus of 2—8 sessile sporangia, without indusium, with complete transverse annulus, dehiscing longitudinally. *Chief genus*: *Gleichenia*.

Gleniea Hook. f. Sapindaceae (I). 1 Ceylon.

- Glinus** L. (*Mollugo* L. p.p. *BH.*). Aizoaceae (1). 6 trop. and subtrop.
- Gliciridia** H. B. et K. Leguminosae (III. 6). 5 trop. Am., W.I.
- Glischrocolla** A. DC. (*Endonema* *BH.*). Penaeaceae. 1 S. Afr.
- Glischrothamnus** Pilger. Aizoaceae (1). 1 Brazil.
- Globba** L. Zingiberaceae (1). 60 Indomal. There is a short K; above this is the C tube, from the end of which spring 3 petals, a large labellum and 2 stds., also the slightly petaloid fertile sta., projecting beyond which is the style. The ovary is 1-loc. with parietal plac. The lower cymes are usu. replaced by bulbils; the mass of one of these consists of a root, springing lat. from the axis.
- Globe daisy**, *Globularia*; -**flower**, *Trollius*; -**thistle**, *Echinops*.
- Globose**, almost spherical.
- Globularia** Tourn. ex L. Globulariaceae. 18 Medit., Eur.
- Globulariaceae** (*EP.*; *Selagineae* p.p. *BH.*). Dicots. (Sympet. Tubiflorae). 3 gen., 20 sp., Eur., Medit., Afr. Herbs or shrubs with alt., exstip., simple l. and heads or spikes of fls. with or without invol. of bracts. Fl. ♀. K (5), persistent; C (5), median-zygomorphic; the upper lip of 2 petals is shorter than the 3-petalled lower lip; A 4, didynamous, epipetalous; G 1-loc., with 1 pend. anatr. ov. Fr. a one-seeded nut, free in base of calyx; embryo straight, in endosp. *Chief genus*: *Globularia*.
- Globulea** Haw. = *Crassula* Dill. p.p. (*Crassul.*).
- Globulostylis** Wernham. Rubiaceae (II. 1). 2 Nigeria.
- Glochidia**, *Azolla*.
- Glochidion** Forst. Euphorbiaceae (A. I. 1). 160 trop. As., Polynes.
- Glochidopleurum** Koso-Poljansky. Umbelliferae (III. 5). 1 Cyprus.
- Glockereria** Nees. Acanthaceae (IV. B). 5 Mexico, C. Am.
- Gloeocarpus** Radlk. Sapindaceae (1). 1 Phil. Is.
- Gloeospermum** Triana et Planch. Violaceae. 5 trop. Am.
- Glomera** Blume. Orchidaceae (II. a. III). 12 Malay Archip., Polynesia.
- Glomerate**, collected into heads.
- Glomeropitcairnia** Mez. Bromeliaceae (3). 2 Venezuela, W.I.
- Glomerule**, a cluster of short-stalked fls.
- Gloriosa** L. Liliaceae (1). 5 trop. As., Afr. They climb by aid of the l., whose tips twine like tendrils. Fl. pendulous, with sta. and style projecting horiz. Cult. orn. fl.
- Glory of the snow**, *Chionodoxa*.
- Gloscomia** D. Don, **Glossocomia** Reichb. = *Codonopsis* Wall. (Campan.).
- Glossocalyx** Benth. Monimiaceae. 3 trop. W. Afr.
- Glossocardia** Cass. Compositae (5). 1 Indomal.
- Glossocarya** Wall. Verbenaceae (5). 3 Indomal.
- Glossochilus** Nees. Acanthaceae (IV. A). 2 S. Afr.
- Glossodia** R. Br. Orchidaceae (II. 2). 5 Austr.
- Glossogyne** Cass. Compositae (5). 5 Indomal., China.
- Glossolepis** Gilg. Sapindaceae (1). 1 Cameroons.
- Glossonema** Decne. Asclepiadaceae (II. 1). 6 trop. Afr. and As.
- Glossopetalon** A. Gray. Celastraceae. 3 S.W. U.S.
- Glossopholis** Pierre. Menispermaceae. 3 trop. Afr.
- Glossorhyncha** Ridl. Orchidaceae (II. 5). 3 Malay Archipelago.

- Glossostelma** Schlechter. Asclepiadaceae (II. 1). 1 Angola.
- Glossostemon** Desf. Sterculiaceae. 1 Persia.
- Glossostephanus** E. Mey. Asclepiadaceae (II. 1). 1 S. Afr.
- Glossostigma** Wight et Arn. Scrophulariaceae (II. 6). 3 warm |*.
- Glossostylis** Cham. et Schlecht. = *Alectra* Thunb. (*BH.*) = *Melasma* Berg. p.p. (Scrophular.).
- Glossula** Lindl. (*Habenaria* p.p. *EP.*). Orchidaceae (II. 1). 1 China.
- Gloxinia** L'Hérit. Gesneriaceae (II). 6 trop. Am. *G. speciosa* Lodd., &c., often cult. orn. fl., cf. *Sinningia*.
- Glucose**, grape sugar.
- Glumaceae** (*BH.*). The 7th series of Monocotyledons.
- Glumaceous**, glume-like.
- Glumicalyx** Hiern. Scrophulariaceae (III. 1). 1 S. Afr.
- Glumiflorae**. The 4th order (Engler) or 2nd (Warming) of Monocotyledons.
- Gluta** L. Anacardiaceae (1). 5 trop. As., Madag. The sap of *G. Renghas* L. yields a good varnish.
- Glyceria** R. Br. Gramineae (10). 20 cosmop., esp. N. Am. 2 in Brit. Pasture grasses in wet meadows.
- Glycine** L. (incl. *Soja* Moench.). Leguminosae (III. 10). 16 palaeotrop. *G. Soja* Sieb. et Zucc. and *G. hispida* Maxim. yield Soja beans, eaten in Japan, &c., and used as green fodder. An oil is obtained from the seeds.
- Glycosmis** Correa. Rutaceae (v). 6 Indomal. Fr. ed.
- Glycyderas** Cass. Compositae (3). 1 Madag.
- Glycyrrhiza** Tourn. ex L. Leguminosae (III. 6). 12 temp. and sub-trop. An extract of the rhiz. of *G. glabra* L. is Spanish liquorice.
- Glyphaea** Hook. f. Tiliaceae. 2 trop. Afr.
- Glyphosperma** S. Wats. Liliaceae (III). 1 North Mexico.
- Glyptopetalum** Thw. Celastraceae. 4 Indomal.
- Glyptopleura** Eaton. Compositae (13). 2 Utah to California.
- Glyptostrobus** Endl. (*Taxodium* p.p. *BH.*). Coniferae (Pinaceae; see C. for gen. char.). 2 China, *G. pendulus* Endl. and *G. heterophyllus* Endl.
- Gmelina** L. Verbenaceae (4). 8 Indomal.
- Gnaphalium** L. Compositae (4). 135 cosmop., 4 in Brit. (cudweed). *G. supinum* L., alpine in Scotland, is a tufted hairy xero. [*G. dioicum* L. = *Antennaria*, *G. Leontopodium* L. = *Leontopodium*.]
- Gnaphalodes** A. Gray. Compositae (4). 3 temp. Austr.
- Gnephosis** Cass. Compositae (4). 15 temp. Austr.
- Gnetaceae**. The only fam. of Gnetales, comprising 3 very distinct gen. with about 45 sp. trop. and sub-trop. They are distinguished from the Coniferae by the absence of resin, by the presence of vessels in the secondary wood, and by the occurrence of a P.
- Classification and genera* (after Engler):
- I. *EPHEDROIDAE* (♂ P 2, A 2—8 of sessile 2-loc. anthers; ♀ P pipe-like, ov. with simple integument. P hard when ripe, br. fleshy): *Ephedra*.
 - II. *TUMBOOIDEAE* (♂ P 4, A 6 with 3-loc. anthers; ♀ P pipe-like, ov. with 1 integument. Stem tuberous with 2 permanent l.): *Tumboa* (*Welwitschia*).

III. *GNETOIDEAE* (δ P tubular, A 2 sessile on thread-like elongated axis; η P pipe-like, ov. with 2 integuments. Usu. climbing; fls. in spikes, P becoming fleshy): *Gnetum*.

Gnetales, a class of Gymnospermae; only fam. Gnetaceae.

Gnetum L. Gnetaceae. 15 trop. Most are climbing shrubs, a few erect shrubs or small trees. L. decussate, exstip., simple, evergr., leathery. Fls. dioec., in spikes which are frequently grouped into more complex infls. The spike bears decussate bracts, in whose axils are condensed partial infls. of a large number of fls. (cf. Labiatae), about 3—8 in the η , but more (up to 40) in the δ . These fls. form whorls round the stem, and are intermingled with numerous hair-structures. At the top of each nodal group of the δ infl. in most is a single ring of η fls., usu. with only 1 integument and infertile, sometimes with 2 or even 3 integuments and fertile. The δ has a tubular (2-leafed) P, from the top of which the axis projects; at the tip of the axis, right and left, are two sessile 1-loc. anthers. The η has a tubular P like that of Ephedra, surrounding a single orthotr. erect ovule with two integuments; the inner of these projects at the apex of the fl. But there is much difference of opinion as to the morphology of these three envelopes. After fert. the P becomes fleshy, the outer integument woody, forming a drupe-like fr. *G. Gnemon* L. (Malaya) and other sp. are cult. for the ed. fr. [See Gymnospermae, and Karsten in Cohn's *Beiträge* VI., *Bot. Zeit.* 1892, *Ann. Buitenz.* XI. &c.]

Gnidia L. Thymelaeaceae. 100 Afr, Madag., Indomal.

Gnomonia Lunell (*Festuca* p.p.). Gramineae (10). 6 W. U.S.

Goa bean, *Psophocarpus tetragonolobus* DC.

Goat's beard, *Tragopogon pratensis* L., (Am.) *Spiraea Aruncus* L.; -rue, *Galega*, (W.I.) *Tephrosia cinerea* Pers.

Goatweed, *Aegopodium Podagraria* L., (Ceylon, &c.) *Ageratum conyzoides* L.; (W.I.) *Capraria*, *Stemodia*.

Gobbo, *Hibiscus esculentus* L.

Gochnatia H. B. et K. Compositae (12). 12 Mexico to S. Am.

Godetia Spach (*Oenothera* p.p. *BH.*). Onagr. (2). 25 W. Am. Cult. orn. fl.

Godmania Hemsl. Bignoniaceae (2). 1 Panama, Venezuela.

Godoya Ruiz et Pav. Ochnaceae. 4 Peru, Colombia, Brazil.

Goebelia Bunge = *Sophora* L. p.p. (Legum.).

Goeldinia Huber. Lecythidaceae. 2 Brazil.

Goeppertia Griseb. (*Bisgoeppertia* O. Ktze.). Gentian. (1). 2 Cuba.

Goeppertia Nees = *Aydendron* Nees.

Goethalsia Pittier. Tiliaceae. 1 Panama.

Goethartia Herzog. Urticaceae (3). 1 Bolivia.

Goethea Nees. Malvaceae (3). 2 Brazil. Several buds in each axil, some of which give rise years later to fls., borne on the old wood. Epicalyx brightly coloured. The C does not spread out, but the styles first emerge and afterwards the sta. (reverse of usual behaviour in Malvaceae). Honey is secreted at the base of the K. The styles are twice as numerous as the cpls. (cf. *Pavonia*).

Goetzea Wydler. Solanaceae (4). 1 Porto Rico.

Gold-of-pleasure, *Camelina sativa* Cr. .

- Goldbachia** DC. Cruciferae (2). 2 N. temp. |* and Yunnan.
- Golden club** (Am.), *Orontium*; -**drop**, *Onosma*; -**feather**, *Chrysanthemum Parthenium* Bernh., var. *aureum*; -**fern**, *Gymnogramma argentea* Mett., var. *aurea*; -**lily**, *Lycoris*; -**pine**, *Pseudolarix*; -**rod**, *Solidago*; -**saxifrage**, *Chrysosplenium*; -**seal**, *Hydrastis*; -**thistle**, *Scolymus hispanicus* L.; -**thread** (Am.), *Coptis trifolia* Salisb.; -**top** (Am.), *Lamarckia aurea* Moench.; -**tuft** (W.I.), *Pterocaulon*; -**wattle**, *Acacia*.
- Goldfussia** Nees = *Strobilanthes* Blume (Acanth.).
- Goldmanella** Greenman (*Goldmania* p.p.). Compositae (5). 1 Mexico.
- Goldmania** Greenman. Compositae (5). 1 Mexico.
- Goldmania** Rose. Leguminosae (I. 5). 2 Mexico.
- Gold-mohur tree**, *Poinciana regia* Boj.
- Goldschmidtia** Dammer. Orchidaceae. Nomen.
- Golenkinianthe** Koso-Poljansky (*Grammosciadium* DC.). Umbelliferae (III. 5). 1 N. temp. |*.
- Golionema** S. Wats. ex O. Hoffm. Compositae (3). 1 Mexico.
- Gomara** Ruiz et Pav. (*Russellia* EP.). Scrophulariaceae (II. 4). 1 Peru.
- Gomart** *Bursera*.
- Gombo**, *Hibiscus esculentus* L.
- Gomesa** R. Br. Orchidaceae (II. 19). 8 Brazil. Cult. as *Rodriguezias*.
- Gomesia** La Llave. Compositae. Nomen.
- Gomidesia** Berg. (*Myrcia* BH.). Myrtaceae (I). 50 trop. Am., W.I. Ed. fr.
- Gommier**, *Bursera*, *Dacryodes*.
- Gomortega** Ruiz et Pav. Gomortegaceae. 1 S. Am. Shrub with opp. evergr. l. and racemes of fl., monochlamydeous, spirocyclic, ♀. P 7, A 2—3, G (2—3), with one pend. ov. in each loc. Drupe. Endosperm.
- Gomortegaceae** (EP., Lauraceae p.p.? BH.). Dicots. (Archichl. Ranales). Only gen. Gomortega, q.v.
- Gomphandra** Wall. (*Stemonurus* EP.). Icacinaceae. 10 Indomal., Austr.
- Gomphia** Schreb. (*Ouratea* Aubl. EP.). Ochnaceae. 120 trop. Like Ochna, but sta. 10 only.
- Gomphichis** Lindl. Orchidaceae (II. 2). 5 Mts. of S. Am.
- Gomphiluma** Baill. (*Pouteria* p.p. EP.). Sapotaceae (I). 1 Brazil.
- Gomphocalyx** Baker. Rubiaceae (II. 10). 1 Madag.
- Gomphocarpus** R. Br. Asclepiadaceae (II. 1). 100 trop. and S. Afr., S. Am. *G. fruticosus* R. Br. (from Afr.) on shores of nearly all trop.
- Gomphogyne** Griff. Cucurbitaceae (I). 2 E. Ind.
- Gompholobium** Sm. Leguminosae (III. 2). 24 Austr.
- Gomphostemma** Wall. Labiatae (III). 25 Indomal., China.
- Gomphostigma** Turcz. Loganiaceae. 2 S. Afr.
- Gomphrena** L. Amarantaceae (3). 100 trop., subtrop.; herbs with cymose heads of fls.; ♀ with 5 hairy P-leaves and (5) sta. Cult. orn. fl.
- Gomuti palm**, *Arenga saccharifera* Labill.
- Gonatanthus** Klotzsch. Araceae (VI). 2 Himal.

- Gonatopus** Hook. f. Araceae (1). 2 E. trop. Afr.
- Gonatostylis** Schlechter. Orchidaceae (II. 2). 1 New Caled.
- Gongora** Ruiz et Pav. (*Acropera* Lindl.). Orchidaceae (II. 13). 20 trop. Am. Epiph. with hanging fls. whose ovary is so bent that the labellum comes to stand above the column. The sepals and petals spring from the column (an argument for its axial nature). See Darwin, *Orchids*, p. 166. Cult. orn. fl.
- Gongrodiscus** Radlk. Sapindaceae (1). 2 New Caled.
- Gongronema** Decne. Asclepiadaceae (II. 3). 15 palaeotrop.
- Gongrospermum** Radlk. Sapindaceae (1). 1 Phil Is.
- Gongrothamnus** Steetz (*Vernonia* EP.). Compositae (1). 3 trop. Afr.
- Gongylocarpus** Cham et Schlecht. Onagraceae (2). 1 Mexico.
- Gongylosperma** King et Gamble. Asclepiadaceae (1). 1 Mal. Penins.
- Gonianthes** A. Rich. Rubiaceae (inc. sed.). 2 Cuba.
- Goniocarpus** Kon. = Haloragis Forst. (Halorag.)
- Goniocaulon** Cass. Compositae (11). 1 Indomal,
- Goniogyna** DC. = Heylandia DC. (Legum.).
- Goniolimon** Bois. (*Statice* Tourn. BH.). Plumbaginaceae. 10 E. Eur., W. As.
- Gonioma** E. Mey. Apocynaceae (I. 3). 1 S. Afr.
- Goniophlebium** (Bl.) Presl = Polypodium L.
- Goniopteris** Presl = Dryopteris Adans.
- Goniorrhachis** Taub. Leguminosae (II. 3). 1 S.E. Brazil.
- Gonioscypha** Baker. Liliaceae (VII). 1 Himalaya.
- Goniostachyum** Small (*Lippia* p.p. EP.). Verbenaceae (1). 2 N. Am., W. I.
- Goniothalamus** Hook. f. et Thoms. Anonaceae (2). 45 trop. As.
- Gonipia** Rafin. = Gentiana Tourn. (Gentian.).
- Gonocaryum** Miq. Icacinaceae. 10 Malaya.
- Gonocitrus** Kurz. Rutaceae (inc. sed.). 1 Indomal.
- Gonolobus** Michx. Asclepiadaceae (II. 4). 80 Am.
- Gonospermum** Less. Compositae (7). 4 Canaries.
- Gonostegia** Turcz. = Pouzolzia Gaudich. (BH.). = Memorialis Buch.-Ham.
- Gonyanera** Korth. Rubiaceae (I. 7). 1 Sumatra.
- Gonypetalum** Ule. Dichapetalaceae. 2 Amazon valley.
- Gonystilaceae** (EP.; *Thymelaeaceae* p.p. BH.). Dicots. (Archichl. Malvales). Only gen. *Gonystilus*, q.v.
- Gonystilus** Teijsm. et Binn. Gonystilaceae. 7 Indomal. Shrubs with alt. entire exstip. l. and cymes of fls., ♂, reg. K, C 5—4, A ∞, G (5—3), each with 1 pend. ov. Berry. No endosperm.
- Gonzalagunia** Ruiz et Pav. (*Gonzalea* BH.). Rubi. (I. 7). 10 trop. Am., W. I.
- Gonzalea** Pers. (cf. last). Rubiaceae (I. 7). 10 trop. Am., W. I.
- Goodallia** Benth. Thymelaeaceae. 1 Brit. Guiana.
- Goodenia** Sm. Goodeniaceae. 100 Austr. Ovary 1-loc. above, often ± 2-loc. below.
- Goodeniaceae** (EP., BH.). Dicots. (Sympet. Campanulatae; Campanales BH.). 13 gen., 300 sp., chiefly Austr. (esp. S.W.), a few N.Z., Polynes., and trop. coasts. Herbs and shrubs with rad. or alt. rarely opp. exstip. l. and no latex. Fls. ♂, ♀, sol. in the leaf-axils or in cymes,

racemes, or spikes. K usu. 5, small; C (5); A 5, alt. with the petals, epipet. or not, with introrse sometimes syngenesious anthers; G (2), inf. or semi-inf. 1- or 2-loc.; ovules 1, 2, or ∞ in each usually ascending, anatropous; style simple with 'pollen-cup' close under the stigma. Into this the pollen is shed in the bud; it then closes up, leaving only a narrow opening. The style bends down to stand in the mouth of the almost horizontal fl., so that insect-visitors come in contact with the cup and dust themselves with a little of the powdery pollen. As the stigmatic lobes grow up in the cup they keep forcing fresh pollen into the narrow slit, and finally emerge by it themselves and then receive the pollen of younger fls. from insect-visitors. The mechanism should be carefully compared with that of Campanulaceae and Compositae. Fr. usu. caps., sometimes a nut or drupe. Embryo straight, in fleshy endosp.

The G. are very closely allied to Campanulaceae, differing chiefly in the absence of latex and the presence of the pollen-cup. They resemble Gentianaceae in a few points. *Chief genera*: Goodenia, Leschenaultia, Scaevola, Dampiera. [BH. chars. incl. those of Brunoniaceae.]

Goodenovioeae (BH.) = Goodeniaceae.

Goodia Salisb. Leguminosae (III. 3). 2 S. Austr.

Good King Henry, *Chenopodium Bonus-Henricus* L.

Goodyera R. Br. Orchidaceae (II. 2). 40 N. temp., trop. As., New Caled., Mascarenes; *G. repens* R. Br. in Brit. Fl. as in *Epipactis* (Darwin, *Orchids*, p. 103).

Gooringia Williams (*Arenaria* p.p.). Carophyll. (I. 1). 1 Tibet.

Gooseberry, *Ribes Grossularia* L.; **American-** (W.I.), *Heterotrichum*; **Barbadoes-** (W.I.), *Peireskia aculeata* Mill.; **Cape-**, *Physalis*; **Otaheite-**, ditto; **-tomato**, ditto.

Goose-foot, *Chenopodium*; **-grass**, *Galium*, (Am.) *Eleusine indica*.

Gorceixia Baker. Compositae (I). 1 Rio de Janeiro.

Gordonia Ellis. Theaceae. 20 Indomal., China, N. Am. Seeds winged. The bark of *G. Lasianthus* L. (loblolly-bay, S. U.S.) is employed for tanning. Sta. opp. to petals.

Gorgoglossum F. C. Lehm. Orchidaceae (II. 13). 1 Colombia.

Gorgonidium Schott. Araceae (VII). 1 Malay Archipelago.

Gormaniana Britton ex Britton et Rose. Crassulaceae. 9 W. N. Am.

Gorse, *Ulex*; **needle-**, *Genista*.

Gorteria L. p.p. (p.p. = *Berkheya* Ehrh.). Compositae (10). 4 S. Afr.

Gosela Choisy. Scrophulariaceae (II 7). 1 S. Afr.

Gossweilera Sp. Moore. Compositae (1). 1 Portuguese W. Afr.

Gossypianthus Hook. Amarantaceae (3). 2 Texas, Mexico.

Gossypium L. Malvaceae (4). 12 trop. and sub trop. Epicalyx of 3 l. G (5). Loculic. caps. The seeds are covered with long hairs forming the material known as cotton (*q.v.*). The cult. forms are apparently reducible to 3 sp., *G. barbadense* L. (trop. Am.), *G. arboreum* L. (Old World), and *G. herbaceum* L. (ditto). The cotton separates easily from the seed in the first sp., which is the Sea Island cotton of the U.S.; in Egypt, India, &c. the other sp. are most used. From the seeds an oil is obtained by crushing (cotton-seed oil), and

the oil-cake left behind is largely used for feeding cattle, &c. The fls. are visited by bees and (in Am.) by humming-birds.

Gothofreda Vent. = *Oxypetalum* R. Br. (Asclep.).

Gouania Jacq. Rhamnaceae. 45 trop. and subtrop. Some have watch-spring tendrils. The stalks of some sp. contain saponin.

Goughia Wight = *Daphniphyllum* Blume (Euphorb.).

Gouldardia Husnot (*Agropyrum* p.p.). Gramineae (12). 2 Europe.

Gouldia A. Gray. Rubiaceae (1. 7). 5 Hawaiian Is.

Goupia Aubl. Celastraceae. 2 Guiana.

Gourd, *Cucurbita*; **bitter-**, *Citrullus*; **bottle-**, *Lagenaria*; **snake-**, *Trichosanthes*.

Gourliea Gillies ex Hook. Leguminosae (III. 1). 1 temp. S. Am. Pod ed.

Goutweed, *Aegopodium Podagraria* L.

Govenia Lindl. Orchidaceae (II. 10). 10 Brazil to W.I.

Gowan, daisy.

Goyazia Taub. Gesneriaceae. 1 Brazil.

Grabowskia Schlechtd. Solanaceae (2). 6 S. Am.

Gracilis (Lat.), slender.

Graderia Benth. Scrophulariaceae (III. 2). 3 Afr.

Graeffea Seem. Tiliaceae. 1 Fiji.

Graellsia Boiss. Cruciferae (2). 1 Persia.

Graffenrieda DC. Melastomaceae (1). 18 trop. S. Am., W.I.

Graft-hybrid, *Cytisus*.

Grahamia Gill. Portulacaceae. 1 temp. S. Am.

Graines d'Avignon, *Rhamnus*; **grains of Paradise**, *Anomum*.

Gram, *Cicer*; **black and green**, *Phaseolus*; **horse**, *Dolichos*.

Gram or **gramma grass**, *Bouteloua*.

Gramerium Desv. (*Panicum* p.p. *EP.*). Gramineae (5). 1 Chili.

Gramineae (*EP.*, *BH.*). Monocots. (Glumiflorae; Glumaceae *BH.*).

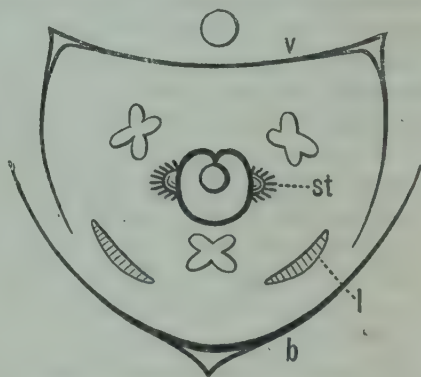
One of the largest orders of flg. pl., with about 350 gen. and 4000 sp. in all regions of the globe. In the temp. zones esp. they are a most important feature in the veg., forming prairies, steppes, &c. Most grasses are herbaceous with fibrous root, but a few, chiefly the bamboos (*q.v.*), reach a large size, even as much as 100 ft. Many are annual, but many perennial; the latter commonly branch largely from their lower nodes and thus often give rise to a tufted habit (as seen in many common sp.); many possess rhiz. The stem has well-marked nodes, composed chiefly of softer tissues. If a stem be bent downwards (as occurs when wheat is 'laid') these nodes recommence growth, growing more rapidly upon the lower side, so that the stem is once more brought to the vertical position. The stem is usu. hollow (exc. *Zea*, *Saccharum*, &c.) and circular in section. The l. are alt., and with few exceptions, in 2-ranked phyllotaxy; they have a sheathing base, the edges of the sheath overlapping one another upon the side of the stem opp. to the blade (*cf.* Cyperaceae); there is no petiole (exc. in a few bamboos, &c.), and at the junction of blade and sheath there is a little membranous outgrowth, the *ligule*, upon the upper side of the leaf. The blade is usu. linear. Many xero. grasses have grooves along the upper side of the l., with the stomata at the bases of the grooves; in most of these cases the

l. rolls up upwards in dry air, enclosing the stomata completely and checking transpiration; the lower surface, which thus becomes the outer, is covered with thick-walled cells and has no stomata. When the air again becomes moist the l. unrolls.

The infl. is complex; the unit of infl. is not the individual fl. but a *spikelet*, or small spike of fls. These are well seen in oats, where they are arranged in a panicle; in wheat the spikelets are sessile upon the main axis, forming a cpd. spike, usu. termed simply a spike; this is more clearly seen in rye-grass. Each of these spikelets consists of one or more (usu. not more than 5) fls. one above the other on opp. sides of a very short axis, the whole enclosed in one or two or more larger leaves at the base of the axis, the *glumes*. The first diagram gives a rough representation of the construction of a spikelet. The central line represents the axis (supposed elongated), which bears at the base usu. two leaves with nothing in their axils; these are the glumes.

Above them stand one or more leaves, the *inferior paleae*, in whose axils occur fls. (sometimes aborted). Upon the axis of the fl., opp. to the inf. palea, stands another leaf, the *superior palea*. Between the paleae the fl. itself is enclosed. The sup. palea, being upon the same axis as the fl., is evidently its bracteole. Owing to the shortness of the floral axis, it appears to be in the axil of the inf. palea, or even upon the main axis of the spikelet. Above the sup. palea are two very small scales, the *lodicules*; they are opp. to the sup. palea (l in fig.) and insignificant in size. They are sometimes supposed to repres. two of the three l. of a reduced P, but it seems more probable that they really repres. a second bracteole and that the fl. is perfectly naked. The fl. itself has usu. 3 sta. with long filaments and versatile anthers, and 1 cpl. forming a 1-loc. ovary, with 1 basal erect anatr. ovule, and 1 or more (usu. 2) stigmas, much branched. This ovary has sometimes been regarded as formed of > 1 cpl., but the suture of the post. side of the ovary (*cf.* *Prunus*) seems to point clearly to its being of 1 cpl. only. The two stigmas may then be regarded as developments of the lat. parts of the cpl. whilst the central part (which usu. forms the stigma) remains undeveloped; this also is the explanation of the two lodicules placed right and left of the proper position for an upper bracteole.

All the fls. in the spikelet are enclosed as a rule within the glumes until ready to open. Then the glumes separate, and the hygroscopic lodicules force apart the paleae of the fls. Most sp. in Eur. are anemoph. and protog.; the sta. grow very rapidly in



Floral diagram of a grass (after Eichler). b, inferior palea; v, superior palea; l, lodicule; st., stigma.

warm weather and suspend the anthers clear of the paleae so that the loose powdery pollen is easily blown away and may be caught by the large stigma of another fl.

The fruit is a caryopsis, *i.e.* an achene whose pericarp is completely united to the seed-coat. Its construction can be well seen in maize (or wheat); at the broad end is the scar of the style, and on the under side at the pointed end is the embryo; on the upper side is the *hilum* or point where the ovule was attached to the wall of the cpl. (the form of this scar is important in classification); the bulk of the seed consists of floury endosp. The embryo is straight, with its one cot. (*scutellum*) completely enwrapping the radicle and plumule (this can be easily made out by dissecting soaked material). The radicle is towards the lower end of the fr. In germin. the cot. remains within the seed and extracts nourishment from the endosperm; afterwards it withers away. Most grass frs. are sufficiently light to be dispersed by wind, esp. as the paleae often remain attached to them and become dry and chaffy. Others have hooks. Self-burying arrangement in *Stipa* (*q.v.*), effected by aid of the *awn* (this term is applied to any long thread-like outgrowth of glume or palea). Many grasses, *e.g.* sp. of *Poa* and *Festuca*, are *viviparous*, esp. on mountains. The spikelets are replaced by leafy shoots with adv. roots at their bases. These drop off and grow upon the soil (*cf.* *Agave*, *Allium*, &c.).

From the economic point of view the G. are only rivalled in importance, if at all, by the *Palmae* and *Leguminosae*. The cereal grasses, *e.g.* *Oryza*, *Triticum*, *Zea*, *Avena*, *Hordeum*, &c. afford food to a large proportion of the earth's inhabitants (see *Edible Products*). Many grasses are valuable as fodder (*q.v.*) for domestic animals, or for hay. The bamboos (*q.v.*) supply many of the wants of the natives of trop. countries, Japan, &c. Many are used as sandbinders, &c.

Classification and chief genera (after Hackel): the G. show near relationship only to *Cyperaceae* and perhaps *Juncaceae*, and are easily distinguished from these either by their veg. or floral characters.

A. Spikelets 1-flowered without elongation of the axis beyond the fl., or 2-flowered with the lower fl. imperfect; without measurable internode between the individual glumes or paleae, and when ripe falling off from the stalk as a whole or together with certain parts of the axis of the spike.

- a. Hilum point-like; spikelets not compressed lat., but usually dorsally compressed or cylindrical.
 1. *Maydeae* (inf. palea and, when present, sup. palea thin and membranous; glumes firm, even leathery or cartilaginous, the lowest one the largest and overlapping the rest; spikelets usu. in racemes or spikes which become jointed when ripe; ♂ and ♀ spikelets in separate infls. or in separate parts of the same infl.); *Euchlaena*, *Zea*, *Coix*.
 2. *Andropogoneae* (as I, but spikelets ♂, or ♂ and ♀ side by side in the same infl.): *Saccharum*, *Andropogon*, *Sorghum*.
 3. *Zoysieae* (paleae membranous; glumes herbaceous, papery or leathery, the lowest usu. the largest; spikelets falling singly or in groups from an unjointed spike-axis): *Zoysia*.

4. *Tristegineae* (paleae membranous; glumes herbaceous or firm and papery, the lowest smaller or narrower than the rest; spikelets falling singly from the twigs of a panicle): *Arundinella*.
5. *Paniceae* (paleae usu. cartilaginous, leathery or papery; glumes more delicate, usu. herbaceous, the lowest usu. smaller; spikelets falling singly from the twigs of a panicle or unjointed spike-axis): *Paspalum*, *Panicum*, *Setaria*, *Cenchrus*, *Pennisetum*, *Spinifex*.
 - b. Hilum linear; spikelets lat. compressed.
6. *Oryzeae*: *Zizania*, *Oryza*, *Lygeum*, *Leersia*.
- B. Spikelets 1—many-flowered; when 1-flowered often with a prolongation of the axis above the fl., their stalks usu. jointed above the glumes, so that they fall off leaving these on the axis; when 2- or more-flowered, always with distinct internodes between the fls.
 - a. Stem herbaceous annual. No petiole, or joint between blade and sheath.
7. *Phalarideae* (spikelets in panicles, spikelike panicles or racemes on distinct stalks—sometimes very short, not set in notches on the main axis; 1-flowered, with 4 glumes and 1-nerved sup. palea): *Phalaris*, *Anthoxanthum*.
8. *Agrostideae* (as 7, but spikelets with two or no glumes and 2-nerved sup. palea): *Aristida*, *Stipa*, *Phleum*, *Alopecurus*, *Sporobolus*, *Polypogon*, *Agrostis*, *Calamagrostis*, *Ammophila*, *Apera*, *Lagurus*.
9. *Aveneae* (infl. as 7, but spikelets 2—many-flowered; inf. paleae usu. shorter than glumes, with twisted awn upon the dorsal side, more rarely with no awn or with an awn upon the tip as 10, but then always with 2 almost opp. fls. and no prolongation of the axis beyond them): *Holcus*, *Aira*, *Corynephorus*, *Deschampsia*, *Trisetum*, *Avena*, *Arrhenatherum*, *Danthonia*.
10. *Festuceae* (as 9, but inf. palea usu. longer than glume, without awn or with untwisted awn at tip): *Sesleria*, *Gynerium*, *Arundo*, *Phragmites*, *Eragrostis*, *Catabrosa*, *Melica*, *Briza*, *Dactylis*, *Cynosurus*, *Poa*, *Glyceria*, *Festuca*, *Bromus*, *Brachypodium*.
11. *Chlorideae* (spikelets in 2 rows approximated to one another, forming a one-sided spike or raceme with unjointed axis): *Cynodon*, *Spartina*, *Chloris*, *Bouteloua*, *Eleusine*.
12. *Hordeae* (spikelets in 2, or rarely more, opp. rows, forming a symmetrical, rarely one-sided, spike): *Nardus*, *Lolium*, *Agropyrum*, *Secale*, *Triticum*, *Hordeum*, *Elymus*.
 - b. Stem woody, at least below; leaf often petiolate, finally separating from its sheath by a joint.
13. *Bambuseae*: *Arundinaria*, *Bambusa*, *Dendrocalamus*.

Space will not permit of giving a key to the genera; the student should work through the commoner ones with a flora, or with Ward or Hutchinson's *British Grasses*.

Gramineous, relating to grasses, grass-like.

Grammadenia Benth. Myrsinaceae (II). 10 trop. Am., W.I.

Grammangis Reichb. f. Orchidaceae (II. 17). 2 Madag., Java.

Grammanthes DC. Crassulaceae. 1 S. Afr.

Grammatocarpus Presl (*Scyphanthus* EP.). Loasaceae. 2 Chili.

Grammatophyllum Blume. Orchidaceae (II. 17). 5 Malaya. *G. speciosum* Bl. is about the largest known orchid.

Grammatotheca C. Presl (*Lobelia* p.p. BH.). Campanulaceae (III). 1 S. Afr., 1 Austr.

Grammica Lour. = *Cuscuta* L. (Convolv.).

Grammitis Sw. = *Polypodium* L.

Grammosciadium DC. (*Chaerophyllum* p.p. BH.). Umbelliferae (III. 8). 8 E. Medit.

Granadilla (Tour.) Rupp. = *Passiflora* L. p.p. (Passifl.).

Granadilla, *Passiflora quadrangularis* L.; **-tree** (W.I.), *Brya*.

Grandidiera Jaub. Flacourtiaceae (2). 1 Zanzibar.

Grandiflorus (Lat.), large fld.; **grandis** (Lat.), large.

Grangea Adans. Compositae (3). 2 palaeotrop.

Grangeria Comm. ex Juss. Rosaceae (VI). 3 Madag., Mauritius, Sundas.

Grantia Boiss. Compositae (4). 5 E. Medit.

Grape, *Vitis vinifera* L., &c.; **-fruit**, *Citrus decumana* Murr., var.; **-hyacinth**, *Muscari*; **seaside-**, **-tree**, **wild-** (W.I.), *Coccoloba*.

Graphephorum Desv. Gramineae (10). 1 N. Am.

Graphistemma Champ. ex Benth. et Hook. f. Asclep. (II. 1). 1 China.

Grapple plant, *Harpagophytum*.

Graptopetalum Rose. Crassulaceae. 1 Mexico.

Graptophyllum Nees. Acanthaceae (IV. B). 5 Austr., Polynesia. *G. hortense* Nees (*G. pictum* Griff.) cult. for its prettily marked l.

Grass, one of the Gramineae; **alkali-**, *Distichlis*; **arrow-**, *Triglochin*; **barley-**, *Hordeum*; **barnyard-**, *Panicum*; **beard-**, *Polypogon*; **bent-**, *Agrostis*, *Apera*; **Bermuda-**, *Cynodon*; **blue-**, see Kentucky blue; **brome-**, *Bromus*; **buffalo-**, *Buchloe*; **canary-**, *Phalaris*; **cat's tail-**, *Phleum*; **China-**, *Boehmeria*; **citronella-**, *Cymbopogon*; **cock's foot**, *Dactylis*; **cord-**, *Spartina*; **cotton-**, *Eriophorum*; **couch-**, *Agropyron*; **crab-** (Am.), *Panicum*; **darnel-**, *Lolium*; **ditch-** (Am.), *Ruppia*; **dog's tail-**, *Cynosurus*; **dog's tooth-**, *Cynodon*; **eel-**, *Zostera*; **esparto-**, *Lygeum*, *Stipa*; **false brome-**, *Brachypodium*; **false oat-**, *Arrhenatherum*; **feather-**, *Stipa*; **fescue-**, *Festuca*; **florin-**, *Agrostis*; **fowl-meadow-** (Am.), *Poa*, *Glyceria*; **fox-tail**, *Alopecurus*; **French rye**, *Arrhenatherum*; **gama-**, *Tripsacum*; **goose-**, *Galium*; **Geranium-**, *Andropogon*; **grama-**, *Tripsacum*; **Guinea-**, *Panicum*; **hair-**, *Deschampsia*, *Aira*; **hedgehog-** (Am.), *Cenchrus*; **herd's-** (Am.), *Phleum*; **holy-** (Am.), *Hierochloe*; **Indian-** (Am.), *Sorghum*; **kangaroo-**, *Anthistiria*; **Kentucky blue**, *Poa pratensis* L.; **knot-**, *Polygonum*, *Agropyron repens* Beauv., (Am.) *Paspalum distichum* L.; **lemon-**, *Cymbopogon*; **lyme-**, *Elymus*; **marram-**, *Ammophila*; **mat-**, *Nardus*; **Mauritius-**, *Panicum*; **meadow-**, *Poa*; **melic-**, *Melica*; **mesquite-** (Am.), *Bouteloua*; **millet-**, *Milium*; **oat-**, *Avena*; **-of Parnassus**, *Parnassia*; **Pampas-**, *Cortaderia*;

panic-, *Panicum*; **quake-**, *Briza*; **reed-**, *Phalaris*; **Rusa-**, *Cymbopogon*; **rush-** (Am.), *Vilfa*; **rye-**, *Lolium*; **scorpion-**, *Myosotis*; **scurvy-**, *Cochlearia*; **soft-**, *Holcus*; **sparrow-**, *Asparagus*; **sweet vernal-**, *Anthoxanthum*; **timothy-**, *Phleum*; **-tree**, *Xanthorrhoea*; **twitch-**, *Agropyron*; **wheat-**, *Agropyron*; **white bent-**, *Agrostis*; **whitlow-**, *Draba*; **-wrack**, *Zostera*.

Grass-cloth, Chinese, *Boehmeria*; **-hemp** (Austr.), *Agave rigida* Mill.

Gratiola (Rupp.). L. Scrophulariaceae (III. 6). 25 cosmop. Sta. 2.

The dried plant of *G. officinalis* L. was formerly offic.

Gratwickia F. Muell. Compositae (4). 1 Austr.

Graveolens (Lat.), strongly scented.

Gravesia Naud. Melastomaceae (1). 10 Madag. Cult. orn. fl. Crossed with *Cassebeeria* they give the fancy 'Bertolonias.'

Gravisia Mez (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 4 trop. Am., W.I.

Grayia Hook. et Arn. Chenopodiaceae (A). 2 W. U.S.

Greater celandine, *Chelidonium majus* L.

Greek valerian (Am.), *Polemonium*.

Green brier (Am.), *Smilax*; **-gram**, *Phaseolus Mungo* L.; **-heart**, *Nectandra Rodiaei* Hook.; **Kendal-**, *Genista*; **-manure**, *Leguminosae*; **-weed**, *dyer's*, *Genista*; **-withe** (W.I.), *Vanilla claviculata* Sw.

Greenlea Wight et Arn. Rubiaceae (1. 3). 6 E. Indomal.

Greenella A. Gray. Compositae (3). 3 S.W. U.S.

Greeneocharis Guerke et Harms. Boraginaceae (IV. 2). 2 Pac. N. Am.

Greeniopsis Merrill. Rubiaceae (1. 5). 2 Phil. Is.

Greenmania Hieron. Compositae (5). 1 Colombia.

Gregarious, growing in company, all of one sp.

Greggia A. Gray. Cruciferae (4). 4 W. Am.

Greigia Regel. Bromeliaceae (4). S. Am. Cult. orn. infl.

Grenacheria Mez. Myrsinaceae (11). 6 Malaya.

Grenadilla, *Passiflora quadrangularis* L.

Greslania Balansa. Gramineae (13). 3 New Caledonia.

Grevea Baill. Saxifragaceae (v). 1 Madag.

Grevellina Baill. (*Turraea* p.p. *EP.*). Meliaceae (III). 1 Madag.

Grevia L. = *Grewia* L. (Tiliaceae).

Grevillea R. Br. Proteaceae (11). 170 Austr. Trees and shrubs with racemose infls., 2 fls. in each axil. The style projects from the bud as a long loop, the stigma being held by the P until the pollen is shed upon it. Then the style straightens out, and the pollen may be removed; presently the female stage supervenes. Some yield useful timber, and *G. robusta* A. Cunn. (silky oak) and other sp. are now extensively employed as shade and timber trees in Ceylon and elsewhere.

Grewia L. Tiliaceae. 120 As., Afr., Austr., esp. trop.

Grewiella O. Ktze. (*Grewiopsis EP.*). Tiliaceae. 2 trop. Afr.

Grewiopsis De Wild. et Durand. Tiliaceae. 2 trop. Afr.

Greyia Hook. et Harv. Melianthaceae. 3 S. Afr.

Grias L. Lecythidaceae. 4 S. Am., W. Ind. *G. cauliflora* L., anchovy pear, cult. in the W.I.

- Grielum** L. Rosaceae (IV). 2 S. Afr.
- Griffianthus** Merrill (*Griffithia* Maingay). Anonaceae (I). 3 Phil. Is.
- Griffinia** Ker-Gawl. Amaryllidaceae (I). 8 Brazil.
- Griffithella** Warming. Podostemaceae. 1 W. Ghats of India. Plants with the general veg. structure of *Dicraea*, but remarkable for the extraordinary polymorphism of their shoots, which may be cup or wineglass shaped, creeping or erect, and of many different forms, shapes, and sizes (*cf.* Willis, *Ann. Perad.*, 1, 1902, p. 364). They are of root nature.
- Griffithia** J. M. Black. Compositae (4). 1 S. Austr.
- Griffithia** Maingay. Anonaceae (I). 3 Malaya.
- Griffithia** Wight et Arn. = *Randia* Houst. (Rubiaceae).
- Griffithianthus** Merrill. Anonaceae (I). 3 Phil. Is.
- Griffonia** Baill. (*Bandeiraea* Welw.). Legum. (II. 4). 3 W. trop. Afr.
- Griffonia** Hook. f. (*Acioa* Aubl.). Rosaceae (VI). 4 trop. Afr.
- Grigri palm** (W.I.), *Martinezia corallina* Mart.
- Grimmeodendron** Urb. Euphorbiaceae (A. II. 7). 2 W. Ind.
- Grindelia** Willd. Compositae (3). 35 Am.
- Grisebachia** Klotzsch (*Eremia* Don). Ericaceae (IV. 2). 25 S. Afr.
- Grisebachiella** Lorentz. Apocynaceae (II. 1). 1 Argentina.
- Griselinia** Forst. f. Cornaceae. 8 N.Z., S. Am.
- Griselinia** Scop. = *Pterocarpus* L. (Legum.).
- Grisia** Brongn. = *Bikkia* Reinw. p.p. (Rubi.).
- Grislea** L. Lythraceae. 1 trop. S. Am.
- Grisollea** Baill. Icacinaceae. 2 Madag., Seychelles.
- Grobya** Lindl. Orchidaceae (II. 17). 2 Brazil.
- Gromwell**, *Lithospermum*, *Mertensia*.
- Grona** Lour. Leguminosae (III. 10). 4 trop. As.
- Gronophyllum** Scheff. Palmaceae (IV. 1). 2 Malaya.
- Gronovia** Houst. ex L. Loasaceae. 2 trop. Am. A 5, no stds. G 1.
- Grosourdyia** Reichb. f. Orchidaceae (II. 20). 3 Malay Archipelago.
- Grossera** Pax. Euphorbiaceae (A. II. 2). 2 trop. Afr.
- Grossularia** Tourn. ex Adans. (*Ribes* p.p.). Saxifrag. (VI). 40 N. Am.
- Ground-cherry** (Am.), *Physalis*; **-hemlock** (Am.), *Taxus*; **-ivy**, *Nepeta Glechoma* Benth.; **-laurel** (Am.), *Epigaea*; **-nut**, *Arachis*, *Voandzeia*, (Am.) *Apios*; **-pine**, *Ajuga Chamaepitys* Schreb., (Am.) *Lycopodium dendroideum* Michx.; **-pink** (Am.), *Phlox subulata* L.
- Groundsel**, *Senecio vulgaris* L.; **-tree** (Am.), *Baccharis*.
- Growth**, permanent change of form; for special cases see *Albizzia*, *Bamboos*, *Dendrocalamus*, *Dracaena*, *Eucalyptus*, *Sequoia*.
- Grubbia** Berg. Grubbiaceae. 3 S. Afr. Woody pl. with opp. leathery l. and small ♂ reg. fls. P 4, A 4+4, G (2), 2-loc. below while young, later 1-loc. with 2 pend. orthotr. ov. on central plac. Drupe. Oily endosp.
- Grubbiaceae** (EP.; *Santalaceae* p.p. BH.). Dicots. (Archichl. Santalales). Only gen. *Grubbia*, q.v.
- Gruinalis** (Lat.), crane's bill shaped.
- Grumilea** Gaertn. (*Psychotria* p.p. BH.). Rubiaceae (II. 5). 45|*.
- Grundelia** L., misprint for *Gundelia*.
- Grusonia** Hort. Nicolai ex K. Schum. = *Opuntia* Tourn. (Cact.).

- Grypocarpa** Greenman. Compositae (5). 1 Mexico.
Guaco, *Mikania amara* Willd.
Guadua Kunth (*Bambusa* p.p. *EP.*). Gramineae (13). 15 trop. Am.
Guaduella Franch. Gramineae (13). 2 trop. Afr.
Guaiaacum Plum. ex L. Zygophyllaceae. 4 N. and trop. Am. *G. officinale* L. yields lignum-vitae wood, from which is also obtained the medicinal resin guaiacum. *Rockwood tree*.
Guamatela J. D. Smith. Rosaceae (III. 2). 1 C. Am.
Guamia Merrill. Anonaceae (1). 1 Phil. Is.
Guapira Aubl. Verbenaceae (inc. sed.). 1 Guiana.
Guapuronga, *Marlierea*.
Guar, *Cyamopsis*.
Guarana, *Paullinia Cupana* H. B. et K.
Guardiola Cerv. ex Humb. et Bonpl. Compositae (5). 5 S.W. U.S., Mexico.
Guarea Allem. ex L. Meliaceae (III). 100 trop. Am., Afr. The disc forms a gynophore, and the sta. are completely united into a tube.
Guatteria Ruiz et Pav. Anonaceae (1). 60 trop. Am. Berry stalked.
Guava, *Psidium*; **black-** (W.I.), *Guettarda argentea* Lam.
Guayule, *Parthenium argentatum* A. Gray.
Guaza, ganja.
Guazuma Plum. ex Adans. Sterculiaceae. 5 trop. Am.
Gueldenstaedtia Fisch. Leguminosae (III. 6). 10 Centr. As., China.
Guelder rose, *Viburnum Opulus* L.
Guepinia Bast. = *Teesdalia* R. Br. (Cruc.).
Guerkea K. Schum. Apocynaceae (II. 1). 2 trop. Afr.
Guernsey lily, *Nerine*.
Guettarda L. Rubiaceae (II. 2). 50 trop. all but 1 (*G. speciosa* L., which is common on trop. coasts) Am.
Guevina (*Gevuina*) Molina. Proteaceae (II). 1 Chili. Ed. nut.
Guichenotia J. Gay. Sterculiaceae. 5 W Austr.
Guiera Adans. Combretaceae. 1 trop. Afr.
Guilandina L. = *Caesalpinia* L. (Legum.).
Guild, a group of pl. resembling one another ecologically.
Guilielma Mart. = *Bactris* Jacq. p.p. (Palm.).
Guillainia Vieill. (*Alpinia* p.p. *EP.*). Zingiberaceae (1). 2 W. Polynes.
Guilleminea H. B. et K. Amarantaceae (3). 3 warm Am.
Guillenia Greene. Cruciferae (1). 6 W.N. Am.
Guillonea Coss. Umbelliferae (III. 7). 2 Spain.
Guimauve, marsh mallow.
Guinea corn, *Sorghum vulgare* Pers.; **-grains**, *Amomum Melegueta* Rosc.; **-grass**, *Panicum maximum* Jacq.; **-hen's weed** (W.I.), *Petiveria*.
Guioa Cav. (*Cupania* p.p. *BH.*). Sapindaceae (1). 35 Indomal.
Guiraoa Coss. Cruciferae (2). 1 Spain.
Guizotia Cass. Compositae (5). 8 Afr. *G. abyssinica* Cass. (rantil or niger-seed) is cult. in India, &c, for its seeds, from which an oil is expressed.
Gulubia Becc. (*Kentia* p.p. *EP.*). Palmaceae (IV. 1). 2 New Guinea.
Gum, products of disintegration of internal tissues, exuding from stems, &c., swelling or dissolving in water, insoluble in alcohol or ether;

common in dry countries. Three chief classes: *arabin* (fully soluble), type *gum-arabic* (*Acacia Senegal* Willd.), *bassorin* (slightly soluble), type *gum-tragacanth* (*Astragalus gummifer* Labill.) and *cerasin* (swelling), type *cherry-gum* (*Prunus Cerasus* L.). Cf. above, and *Chloroxylon*, *Feronia*, *Piptadenia*, &c.; **-ammoniacum**, *Dorema*; **Angico-**, *Piptadenia*; **-arabic**, *Acacia Senegal* Willd.; **-benzoin**, *Styrax*; **blue-**, *Eucalyptus*; **chewing-**, *Achras Sapota* L.; **chicle-**, ditto; **-cistus**, *Cistus*; **-copal**, cf. Copal; **doctor's-** (W.I.), *Rhus Metopium* L.; **-elemi tree** (W.I.), *Dacryodes hexandra* Griseb.; **-euphorbium**, *Euphorbia resinifera* Berg. (Morocco); **-galbanum**, *Ferula*; **-gualacum**, *Guaiaacum*; **-kino**, cf. Kino; **-lac**, cf. Lac; **-ladanum**, *Cistus*; **-olibanum**, *Boswellia*; **-opopanax**, *Opopanax*; **-plant** (Am.) *Grindelia*; **-resins**, resins containing a mixture of gum and resin, *Boswellia* (frankincense), *Calophyllum*, *Convolvulus*, *Dorema*, *Ferula*, *Garcinia* (gamboge); **-sandarach**, *Tetraclinis*; **sweet-**, *Liquidambar*; **-tragacanth**, *Astragalus*; **-tree**, *Nyssa*, (W.I.) *Sapium*.

Gumbo, *Hibiscus esculentus* L.

Gumillea Ruiz et Pav. Cunoniaceae. 1 Peru. L. alt.

Gundelia (Tourn.) L. Compositae (10). 1 As. Min., Persia.

Gundlachia A. Gray. Compositae (3). 1 Cuba, St. Domingo.

Gundlea Steud. = *Grumilea* Gaertn. (Rubi.).

Gunnera L. Haloragidaceae. 18 S. Am., Costa Rica, N.Z., Tasm., Sandw. Is., Java, S. Afr. Several are enormous herbs with l. several feet across. Fl. 2-merous. G 1-loc. Stem polystelic. In the leaf-axils are 'squamae intravaginales' (cf. Potamogetonaceae). Cult. orn. fol.

Gunnia F. Muell. Aizoaceae (11). 2 S. and W. Austr.

Gunniopsis Pax (*Aizoon* p.p.). Aizoaceae (11). 1 S.E. Austr.

Gunny, *Corchorus*.

Gunpowder plant, *Pilea*.

Gurania Cogn. Cucurbitaceae (2). 55 trop. Am.

Guraniopsis Cogn. Cucurbitaceae (2). 1 Peru.

Gurjun balsam, *Dipterocarpus*.

Gussonea A. Rich. = *Angraecum* Bory p.p. (BH.) = *Mystacidium* Lindl. p.p.

Gustavia L. (*Japaraandiba* Adans.). Lecythidaceae. 20 trop. Am. *G. augusta* L. is the stink-wood; the wood has a foetid smell.

Gutenbergia Sch. Bip. Compositae (1). 10 trop. Afr.

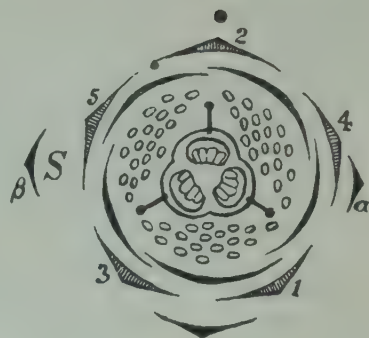
Guthriea Bolus. Achariaceae. 1 S. Afr.

Gutierrezia Lag. Compositae (3). 20 Am.

Gutta-jelutong, *Dyera*; **-percha**, a substance like rubber, but softening with heat, in latex, esp. of Sapotaceae; cf. *Bassia*, *Mimusops*, *Palaquium*, *Payena*; **-puteh**, *Palaquium*; **-rambong**, *Ficus*; **-sundek**, *Payena*.

Guttiferae (EP.; BH. excl. *Hypericaceae*, incl. *Quiinaceae*). Dicotyledons (Archichl. Parietales). 42 gen., 850 sp. chiefly trop. They are (exc. *Hypericum*) trees or shrubs with simple entire opp. exstip. l. Oil glands or passages are always present, often showing as translucent dots upon the l. The infl. is cymose, frequently umbellate. The fls. show considerable variety. The bracteoles are frequently close up

to the calyx, and hardly to be distinguished from it. The axis is usu. convex, but exhibits many forms. The fl. may be cyclic or partly spiral, and is usu. reg., ♀, hypog. K imbricate; C imbr. or conv.; A ∞, free or united in various ways, frequently in bundles (usu. regarded as due to branching of originally simple papillae); very commonly the outer ones or even all are staminodial; G usu. (5) or (3), multi- or 1-loc.; ovules ∞, few, or 1, anatr.; styles free or united. Fr. often capsular, sometimes a berry or drupe. Seed exalb. Many yield useful timber; the resins of *Clusia*, *Garcinia*, *Calophyllum*, &c., and the fr. of *Garcinia* and others are valuable.



Floral diagram of *Hypericum*; after Eichler, ovary cut at base. S the "Schraubel" branch.

Classification and chief genera (after Engler): the G. are closely allied to Theaceae, the only constant distinction being the presence of oil-glands, and to Dipterocarpaceae, which are chiefly distinguished by their alt. stip. l. [BH. excl. Hypericoideae with Endodesmioideae as a separate fam.]

- I. *KIELMEYEROIDEAE* (l. alt. or opp.; fls. usu. ♀, A ∞, style 1, G 3—5-loc.): *Kielmeyera*, *Carapa*.
- II. *HYPERICOIDEAE* (l. opp.; fl. ♀; sta. usu. ∞, usu. in 5 or 3—8 bundles before the petals; styles 3—5, usu. free; fr. a 1- or 3-loc. septi- or loculicidal caps., or indeh.; embryo usu. straight with not very thick cots.): *Hypericum*, *Vismia*.
- III. *ENDODESMIOIDEAE* (sta. united into a tube above, in 5 bundles below; cpl. 1; drupe; cots. fleshy): *Endodesmia* (only genus).
- IV. *CALOPHYLLOIDEAE* (l. opp.; fls. ♀ or ♂ ♀, A ∞ free or united at base, G 1—4 each with 2—1 ov.; fr. indeh.; cots. thick): *Mesua*, *Mammea*, *Calophyllum*.
- V. *CLUSIOIDEAE* (1 opp.; fls. ♀ or ♂ ♀, A ∞ free or in groups; fr. various; cots. small): *Clusia*, *Garcinia*.

Guya Frapp. Flacourtiaceae (4). 1 Réunion.

Guyonia Naud. Melastomaceae (1). 2 trop. W. Afr.

Guzmania Ruiz et Pav. Bromeliaceae (1). 75 trop. S. Am. Epiph.

Gyminda Sarg. (*Myginda* Jacq.). Celastraceae. 1 Florida, W.I.

Gymn-, gymno- (Gr. pref.), naked.

Gymnabicchia × *G. Camus*, &c. Orchidaceae. Hybrid, *Gymnadenia*—*Habenaria* (*Bicchia*).

Gymnacanthus Nees (*Sclerocalyx* Nees BH.). Acanth. (IV. A). 1 Mexico.

Gymnacranthera Warb. (*Myristica* p.p.). Myristicaceae. 12 Indomal.

Gymnadenia R. Br. (*Habenaria* p.p. BH.). Orchidaceae (II. 1). 20 N. temp. |*.

Gymnadeniopsis Rydberg (*Platanthera* p.p. EP.). Orchidaceae (II. 1). 3 N. Am.

- Gymnagathis** Stapf. Melastomaceae (I). 1 S. China.
- Gymnanacamptis** × Aschers. et Graebn. Orchidaceae. Hybrid, *Gymnadenia*—*Anacamptis*.
- Gymnandra** Pall. = *Lagotis* Gaertn. (Scroph.).
- Gymnanthemum** Cass. = *Vernonia* Schreb. p.p. (Comp.).
- Gymnanthera** R. Br. Asclepiadaceae (I). 5 E. Indomal.
- Gymnanthes** Sw. Euphorbiaceae (A. II. 7). 10 trop. Am., W.I.
- Gymnaplatanthera** × G. Camus. Orchidaceae. Hybrid, *Gymnadenia*—*Platanthera*.
- Gymnarrhena** Desf. Compositae (4). 1 Medit., W. As.
- Gymnartocarpus** Boerlage. Moraceae (II). 1 Java.
- Gymnema** R. Br. Asclepiadaceae (II. 3). 30 W. Afr. to Austr. The leaves of *G. sylvestre* R. Br. contain gymnemic acid, and when chewed temporarily destroy the capacity of tasting sugar.
- Gymnemopsis** Constantin. Asclepiadaceae (II. 3). 1 Cochinchina.
- Gymnigritella** × G. Camus. Orchidaceae. Hybrid, *Gymnadenia*—*Nigritella*. 2 Eur.
- Gymnobalanus** Nees et Mart. = *Ocotea* Aubl. p.p. (Laur.).
- Gymnocarpos** Forsk. Caryophyllaceae (I. 4). 1 Canaries to India, used as fodder for camels.
- Gymnochilus** Blume. Orchidaceae (II. 2). 2 Mascarenes.
- Gymnocladus** Lam. Leguminosae (II. 7). 2 China and N. Am. Serial axillary buds. *G. canadensis* Lam. (Kentucky coffee tree) good timber.
- Gymnocline** Cass. = *Chrysanthemum* L. p.p. (Compos.).
- Gymnocoronis** DC. Compositae (2). 2 trop. Am.
- Gymnodiscus** Less. Compositae (8). 2 S. Afr.
- Gymnogonum** Parry (*Oxytheca* p.p.). Polygonaceae (I. 1). 1 N. Am.
- ✓ **Gymnogramma** Desv. Polypodiaceae. 80, esp. trop. *G. leptophylla* Desv., an annual fern, in Jersey.
- Gymnolaema** Benth. Asclepiadaceae (I). 1 Kilimandjaro.
- Gymnolaena** Rydberg. Compositae (6). 4 Mexico.
- Gymnolomia** H. B. et K. Compositae (5). 25 N. and trop. Am.
- Gymnopentzia** Benth. Compositae (7). 2 S. Afr.
- Gymnopetalum** Arn. Cucurbitaceae (3). 6 Indomal.
- ✓ **Gymnopodium** Rolfe. Polygonaceae (III. 1). 1 C. Am.
- ✓ **Gymnopogon** Beauv. Gramineae (II). 6 Am., Ceylon.
- Gymnopsis** DC. = *Gymnolomia* H. B. et K. (Compos.).
- Gymnopteris** Bernh. Polypodiaceae. 15 warm Am., As.
- Gymnoschoenus** Nees (*Mesomelaena* BH.). Cyperaceae (II). 2 Austr.
- Gymnosiphon** Blume. Burmanniaceae. 20 trop.
- Gymnosperma** Less. Compositae (3). 1 Texas, Mexico.
- Gymnospermae**. One of the two great divisions of Spermatophyta or seed-plants, distinguished from Angiospermae by the fact that the cpls. are not so infolded or united as to form an ovary round the ovules; also the endosp. (female prothallus) is formed before fertilisation. The existing G. are divided into four great classes, Cycads, Ginkgoales, Conifers, and Gnetales. These differ very much from one another, so much so that it is by no means impossible that the Gymnosperms are polyphyletic. The Cycads traced backwards show a maximum in the Jurassic, decreasing until about the end of the

Eocene they had shrunk to their present size. They begin about the Permian period, about which time the great class of the Pteridospermae, or seed-bearing ferns (the bulk of what used to be regarded as true ferns in the coal-measures, &c.), was disappearing, and show considerable relationship to the latter. Some of the fossil forms have actual ♀ fls. with numerous sta., and it is quite possible that these are on the direct line of ascent to the Angiosperms. From what the Coniferae and Ginkgoales, which are first found about the beginning of the Permian, took their rise, is as yet quite uncertain, while we do not know enough about the Gnetaceae to draw many conclusions about them.

The fls. in most Cycads and Conifers take the form of cones, and whether each cone represents a fl. or an infl. is still a disputed point. The sta. is of simple structure; in the Cycads there are several pollen-sacs, looking like the sporangia of Marattiaceae, on the lower side of a leaf-like organ; in the Conifers the sta. has usually fewer pollen-sacs and is more leaf-like, while in the Gnetaceae the anthers are sessile. The ovules are always naked in the sense of not being enclosed in an ovary formed of one or more hollow cpls., but they are usually protected in some way from the weather. Wind-pollination occurs.

In the Cycads a considerable mass of sporogenous tissue is formed in the ovule (mega-sporangium); one of the cells of this tissue gives rise to the embryo-sac (mega-spore). This behaviour is closely comparable to that of the higher Pteridophyta. In the embryo-sac the ♀ prothallus (endosperm) forms by cell-division, and archegonia in which the ova are contained develop at the micropylar end. The ovule is now mature and consists of an integument, nucellus, and embryo-sac and its contents.

In most Conifers the sporogenous tissue consists only of the cell which goes to form the embryo-sac. In the sac the same process goes on as in Cycads.

In Ephedra the phenomena are very similar to those in Conifers; in Gnetum several embryo-sacs are frequently formed, and the division of the nucleus of the sac gives rise, not to a prothallus as in the cases above described, but to a number of free nuclei lying on the wall of the sac. Those in the upper part remain free, and one or more of them being fertilised, produce pro-embryos. The lower part of the sac becomes septate into multinuclear compartments (in some sp.), which become uninucleate cells of the primary endosp. as a result of nuclear fusion; in these sp. the primary endosp. is constituted before fert. In Welwitschia it is constituted in a similar way.

The whole question of the relationships of the G. is one of much difficulty. (See Angiospermae, Chalazogamae, Pteridophyta, Cycadaceae, Coniferae, Ginkgo, and refer also to Coulter and Chamberlain, *Morphology of Gymnosperms*, Campbell's *Mosses and Ferns*, Nawaschin in *Mém. de l'Acad. des sc. de St-Petersbourg*, XLII. 1894 (reviewed in *Bot. Centr.* 62, p. 324), and other papers referred to in the articles quoted.)

Gymnosporia Benth. et Hook. f. Celastraceae. 80 trop. and subtrop., esp. Afr. Many have branches modified into thorns.

- Gymnostachys** R. Br. Araceae (1). 1 E. Austr.
- Gymnostachyum** Nees (*Cryptophragmium* Nees *EP.*). Acanthaceae (iv. B). 25 trop. As.
- Gymnostephium** Less. Compositae (3). 6 S. Afr.
- Gymnosteris** Greene (*Gilia EP.*). Polemoniaceae. 3 N. Am.
- Gymnostyles** Juss. = *Soliva* Ruiz et Pav. (Comp.).
- Gymnotheca** Decne. (*Houttuynia EP.*). Saururaceae. 1 China.
- Gymnotrix** Beauv. = *Pennisetum* Pers. p.p. (Gramin.).
- Gynandropsis** DC. (*Pedicellaria* Schrank *EP.*). Capparidaceae (v). 15 trop. and subtrop. The seeds of *G. pentaphylla* DC. are used like mustard.
- Gynandrous**, A and G concrescent.
- Gynerium** Humb. et Bonpl. Gramineae (10). 3 trop. and warm temp. *G. argenteum* Nees (Pampas grass), cf. *Cortaderia*.
- Gyno-** (Gr. pref.), female; **-basic**, *Labiatae*, *Boraginaceae*; **-dioecism**, *Calamintha*, *Caryophyllaceae*, *Echium*, *Labiatae*, *Nepeta*, *Plantago*, *Satureia*, *Spergula*, *Thymus*; **-eaceum**, the carpels, forming the ovary (*q.v.*); **-monoecism**, *Compositae*, *Labiatae*, &c.; **-phore**, an elongation of the recept. bearing cpls. only, *Anacardiaceae*, *Capparidaceae*, *Michelia*; **-stegium**, *Asclepiadaceae*; **-stemium**, *Aristolochiaceae*, *Stylidiaceae*.
- Gynocardia** R. Br. Flacourtiaceae (3). 1 India, *G. odorata* Br.; the seed yields Chaulmoogra oil, used medicinally, &c., in India.
- Gynochthodes** Blume. Rubiaceae (II. 9). 3 Malay Archipelago.
- Gynoglottis** Smith. Orchidaceae (II. 3). 1 Sumatra.
- Gynoon** A. Juss. = *Glochidion* Forst. (Euph.).
- Gynopachis** Blume = *Randia* L. p.p. (Rubi.).
- Gynopleura** Cav. (*Malesherbia* p.p. *EP.*). Malesherbiaceae. 6 Chili.
- Gynopogon** Forst. (*Alyxia* R. Br.). Apocynaceae (I. 3). 40 Madag., Indomal.
- Gynostemma** Blume. Cucurbitaceae (4). 5 warm As., Polynes.
- Gynotroches** Blume. Rhizophoraceae. 2 Malaya.
- Gynoxys** Cass. Compositae (8). 20 Andes of trop.
- Gynura** Cass. Compositae (8). 30 trop. As. and Afr.
- Gypothamnium** Phil. (*Pluzia EP.*). Compositae (12). 1 Chili.
- Gypsocallis** Salisb. = *Erica* Tourn. (Eric.).
- Gypsophila** L. Caryophyllaceae (II. 2). 55 Eur., As., esp. E. Medit. The fls. are shorter in the tube (class B) than most Silenoideae, and are visited by a greater variety of insects. Cult. orn. fl. (chalk plant).
- Gypsy-wort**, *Lycopus europaeus* L.
- Gyranthera** Pittier. Bombacaceae. 1 Panama.
- Gyrate**, curved into a circle.
- Gyrinops** Gaertn. Thymelaeaceae. 2 Indomal.
- Gyrinopsis** Decne. Thymelaeaceae. 1 Phil. Is.
- Gyrocarpus** Jacq. Hernandiaceae (Combretaceae *BH.*). 1 trop. formerly placed in Lauraceae, to which its sta. are very similar. The fr. is often mistaken for that of a Dipterocarp.
- Gyrostachis** Pers. (*Spiranthes* p.p.). Orchidaceae (II. 2). 10 Am.
- Gyrostelma** Fourn. Asclepiadaceae (II. 1). 1 Minas Geraes.
- Gyrostemon** Desf. Phytolaccaceae. 10 Austr.

Gyrotaenia Griseb. Urticaceae (1). 3 W.I.

H (fl. class), usu. zygomorphic fls. with tube 6—15 mm. long, suited to bees, *Aconitum*, *Anemone*, *Antirrhinum*, *Aquilegia*, *Labiatae*, *Leguminosae*, *Lotus*, *Primula*, *Trifolium*.

Haasia Nees = *Dehaasia* Blume (Laur.).

Haastia Hook. f. Compositae (3). 3 N.Z., growing closely together on the ground, and forming cushions (cf. *Raoulia*, *Azorella*).

Habenaria Willd. (BH. incl. *Bonatea* Willd., *Coeloglossum* Hartm., *Gymnadenia* R. Br., *Neotinea* Rchb. f., *Nigritella* Rich., *Platanthera* Rich., and other gen., making 500 sp. cosmop.). Orchidaceae (II. 1). 400 temp. and trop.; 5 in Brit., *H. (C.) viridis* R. Br. (frog-orchis), *H. (G.) conopsea* Benth. (scented orchis), *H. (P.) bifolia* R. Br. (butterfly orchis). &c. See Darwin's *Orchids*.

Habenella Small (*Habenaria* p.p.). Orchidaceae (II. 1). 1 N. Am.

Haberlea Frivald. Gesneriaceae (1). 1 Balkans.

Habit, general external appearance and impression.

Habitat, natural location.

Hablitzia Bieb. Chenopodiaceae (A). 1 Caucasus. Climbing shoot given off yearly from perenn. underground stem (cf. *Bowiea*); climbs by sensitive petioles.

Habracanthus Nees. Acanthaceae (IV. B). 4 Mexico to Colombia.

Habranthus Herb. = *Hippeastrum* Herb. (Amaryll.).

Habrosia Fenzl. Caryophyllaceae (I. 5). 1 W. As.

Habrothamnus Endl. = *Cestrum* L. p.p. (Solan.).

Habzelia A. DC. (*Xylopia* BH.). Anonaceae (4). 2 trop. As.

Hachettea Baill. Balanophoraceae. 1 New Caled.

Hackberry (Am.), *Celtis*.

Hackmatack (Am.), *Larix*.

Hacquetia Neck. Umbelliferae (II. 1). 1 C. Eur.

Haemacanthus Sp. Moore. Acanthaceae (IV. A). 1 Somaliland.

Haemadictyon Lindl. = *Prestonia* R. Br. p.p. (Apocyn.).

Haemanthus (Tourn.) L. Amaryllidaceae (1). 70 S. and trop. Afr. Fls. in cymose heads or umbels. Cult. orn. fl. (Cape tulip).

Haemaria Lindl. Orchidaceae (II. 2). 4 E. As., Malay Archipelago.

Haematocarpus Miers. Menispermaceae. 3 Himalaya, Khasia.

Haematostaphis Hook. f. Anacardiaceae (2). 2 W. Afr.

Haema oxylin, *Haematoxylon*.

Haematoxylon, L. Leguminosae (II. 7). 1 trop. Am., W.I., *H. campechianum* L. (logwood). Young foliage red. Thorns in the leaf-axils. The heart-wood contains haematoxilin and is used in dyeing.

Haemocharis Salisb. (*Laplacea* BH.). Theaceae. 15 Am., As.

Haemodoraceae (EP.; BH. include § VIII, IX, of *Liliaceae*, and part of III of *Amaryllidaceae*). Monocots. (Liliiflorae; Epigynae BH.). 10 gen., 40 sp., Austr., S. Afr., trop. Am. Herbs with paniced infl. of a number of cymes arranged in a racemose way (cf. *Aesculus*). Fl. reg. or transv. ♂ (cf. *Anigozanthos*), ♀, 3-merous; A 3, inserted on inner perianth-l., with intr. anthers; G (3), sup. or inf.; ovules few in each loc., semi-anatr.; stigma capitate. Capsule. Chief genera: *Haemanthus*, *Lachnanthes*, *Wachendorfia*. [BH. chars. incl. A 6 or 3, ovules sometimes ∞ anatr.]

- Haemodorum** Sm. Haemodoraceae. 17 Austr.
- Haenianthus** Griseb. (*Linociera* BH.). Oleaceae. 3 W.I.
- Haenselera** Boiss. ex DC. Compositae (13). 1 S. Spain.
- Hagberry**, *Prunus Avium* L.
- Hagenbachia** Nees et Mart. Haemodoraceae. 1 Brazil.
- Hagenia** J. J. Gmel. (*Brayera* BH.). Rosaceae (III. 5). 1 Abyssinia.
The dried fls. (koso) are medic.
- Hair**, a cellular outgrowth of the epidermis, sometimes glandular, barbed, hooked, stinging, &c.; cf. Leaf for descriptive terms: -**bell**, *Campanula rotundifolia* L.; -**grass**, *Aira*, *Deschampsia*, (Am.) *Agrostis*, *Muhlenbergia*.
- Hakea** Schrad. Proteaceae (II). 100 Austr. Xero. with hard woody fr. The seedlings show transition stages (cf. *Acacia*) from entire l. to the much divided l. usu. in the genus.
- Hakonechloa** Makino (*Phragmites* p.p.). Gramineae (10). 1 cosmop.
- Halacsya** Doerfl. (*Zwackhia* p.p.). Boraginaceae (IV. 5). 1 Eur.
- Halanthium** C. Koch. Chenopodiaceae (B). 9 W. and C. As.
- Halarchon** Bunge. Chenopodiaceae (B). 1 Afghanistan.
- Halconia** Merrill. Tiliaceae. 2 Phil. Is.
- Halenia** Borckh. Gentianaceae (I). 25 As., Am.; alpine and arctic.
Cleistogamic fls. frequent.
- Halerpestes** Greene (*Ranunculus* p.p.). Ranunculaceae (3). 3 N. Am.
- Halesia** L. Styracaceae. 7 Japan, China, and S.E. of N. Am. (cf. *Epigaea*, &c.). Snowdrop-tree, cult. orn. Fr. winged.
- Halfordia** F. Muell. Rutaceae (IV). 2 E. Austr., New Caled.
- Halgania** Gaudich. Boraginaceae (II). 10 Austr.
- Halimium** Spach = *Helianthemum* Tourn. (BH.) = *Cistus* L.
- Halimium** Willd. Cistaceae. 25 N. temp., S. Am.
- Halimocnemis** C. A. Mey. Chenopodiaceae (B). 10 Cent. As.
- Halimodendron** Fisch. ex DC. Leguminosae (III. 6). 1 N. and W.
As. on salt-steppes. Outer leaflets often thorny. Cult. orn.
- Halimolobos** Tausch. Cruciferae (inc. sed.). 1 cult.
- Halimus** L. = *Atriplex* L. (Chenopod.).
- Halleria** L. Scrophulariaceae (II. 4). 8 Afr., Madag.
- Hallia** Thunb. Leguminosae (III. 7). 6 S. Afr.
- Hallieracantha** Stapf (*Ptyssiglottis* p.p.). Acanth. (IV. B). 19 Mal.
Arch.
- Halmilla** (Ceylon), *Berrya Ammonilla* Roxb.
- Halo-** (Gr. prefix), salt-; -**philous**, salt-loving; -**phytes**, the pl. of sea-coasts and salt-steppes, &c., where the presence of salt, by checking absorption, compels a reduction of transpiration, *Aster*, *Chenopodiaceae*, *Frankenia*, *Glaux*, *Halimodendron*, *Halogeton*, *Haloxylon*, *Nolana*, *Pedaliaceae*, *Pemphis*, *Plumbaginaceae*, *Reaumuria*, *Salicornia*, *Sesuvium*, *Spergularia*, *Statice*, *Suaeda*, *Tamaricaceae*, *Zygophyllaceae*.
- Halocharis** Moq. Chenopodiaceae (B). 4 W. As.
- Halochloa** Griseb. (*Monanthochloe* EP.). Gramineae (10). 1 Argentina.
- Halocnemum** Bieb. Chenopodiaceae (A). 1 Medit., C. As.
- Halodule** Endl. (*Diplanthera* EP.). Potamogetonaceae. 2 Indomal., Cuba.

- Halogeton** C. A. Mey. Chenopodiaceae (B). 5 Medit., Centr. As.
H. sativus Moq. (barilla) used to be burnt in Spain, &c., for soda. →
- Halopegia** K. Schum. Marantaceae. 4 palaeotrop.
- Halopeplis** Bunge. Chenopodiaceae (A). 3 E. Medit., C. As.
- Halophila** Thou. Hydrocharidaceae. 6 Indian and Pacific Oceans.
- Halophytes**, cf. Halo-
- Halophytum** Spegazz. (*Tetragonia* p.p.). Chenopodiaceae (A). 1 Patag.
- Halopyrum** Stapf. Gramineae (10). 1 coast of Indian Ocean.
- Halorageae** (BH.) = Haloragidaceae.
- Haloragidaceae** (EP., BH. incl. *Callitrichaceae* and *Hippuridaceae*).
 Dicots. (Archichl. Myrtiflorae; Rosales BH.). 8 gen., 90 sp., cosmop., chiefly Austr. Land, marsh, or water herbs or undershrubs, of various habit (see gen.), with great development of adv. roots, opp., alt., or whorled exstip. l., and inconspic. fls., sol. or in infl. The anatomy is of interest. Fl. ♂ or unisexual, usu. bracteolate, reg., epig., usu. 4-merous. P in two whorls, or one, or absent; A 8, obdipl., or fewer; $\bar{G}$ (1—4); multiloc., with usu. 1 pend. anatr. ov. in each loc.; styles free. Nut or drupe. Embryo straight, in endosp. *Chief genera*: Haloragis, Myriophyllum, Gunnera. Related to Onagraceae, as reduced forms. A gradual series may be traced, from the very complete fl. of Myriophyllum or Haloragis, down to that of Hippuridaceae. [Cf. Engler, *Jahrb.* 34, *Beibl.* 79.] [BH. chars. incl. other fams. mentioned.]
- Haloragis** Forst. Haloragidaceae. 60 Austr., N.Z., Tasm., S.E. As., N. Am., large herbs in damp places. Fls. 4-merous, obdipl.
- Haloschoenus** Nees = Rhynchospora Vahl p p. (Cyper).
- Halostachys** C. A. Mey. Chenopodiaceae (A). 1 temp. Eur. and As.
- Haloxylon** Bunge. Chenopodiaceae (B). 10 Medit. to India. Steppe plants of curious habit (fig. in *Nat. Pfl.*).
- Hamadryas** Comm. ex Juss. Ranunculaceae (3). 5 Antarctic Am.
- Hamamelidaceae** (EP., BH. incl. *Myrothamnaceae*). Dicots. (Archichl. Rosales). 18 gen., 50 sp. chiefly sub-trop. (N. and S.). The distr. areas of the genera (*q.v.*) are extremely disjointed, a fact perhaps due to the influence of the glacial period. Trees and shrubs with alt., simple or palmate, stip. l. Infl. racemose, often a spike or head, frequently with an invol. of coloured bracts. Fl. ♂ or unisexual, often apetalous, rarely naked, hypo-peri- or epigynous, usu. without a disc. K 4—5, usu. imbr.; C 4—5, open or valvate, the petals often long and rolled up like a watch-spring in bud; A 4—5 or rarely fewer; G (2), usu. median, rarely obliquely placed, with 2 styles, 2-loc.; ovules 1 or more in each loc., pend., anatr., with ventral or lateral raphe. Loculic. or septic. capsule. Exocarp woody, endocarp horny. Seed albuminous, with straight embryo. Some sp. yield useful wood, resins, &c. *Chief genera*: Bucklandia, Liquidambar, Altingia, Fothergilla, Hamamelis. Closely allied to Cunoniaceae, and hence to Saxifragaceae. [BH. chars. incl. those of Myrothamnaceae.]
- Hamamelideae** (Bll.) = Hamamelidaceae.
- Hamamelis** Gronov. ex L. Hamamelidaceae. 3, two in China and Japan; *H. virginiana* L. (witch-hazel, cult. orn.), in east N. Am. It flowers in late autumn and ripens its fr. in the following year.

- Hamaria** Kunze. Rosaceae. Nomen.
- Hamelia** Jacq. Rubiaceae (I. 8). 6 Mexico to Paraguay.
- Hamilcoa** Prain. Euphorbiaceae (A. II. 1). 1 Cameroons, Guinea.
- Hamiltonia** Roxb. Rubiaceae (II. 6). 4 Indomal., China.
- Hammatolobium** Fenzl. Leguminosae (III. 7). 2 Medit.
- Hamosa** Medic. (*Astragalus* p.p.). Leguminosae (III. 6). 6 N. Am.
- Hampea** Schlecht. Bombacaceae. 3 C. Am.
- Hanabusaya** Nakai. Campanulaceae (I. 1). 1 Corea.
- Hanburia** Seem. Cucurbitaceae (4). 1 Mexico. Fr. explosive.
- Hancea** Hemsl. Labiatae (inc. sed.). 1 China.
- Hancockia** Rolfe. Orchidaceae (II. 9). 1 China.
- Hancornia** Gomes. Apocynaceae (I. 1). 1 Brazil, *H. speciosa* Gomes, the Mangabeira rubber (*Kew Bull.* 1899, p. 185).
- Handschia** Pohl. Inc. sed. Nomen.
- Hannafordia** F. Muell. Sterculiaceae. 3 Austr.
- Hannoa** Planch. Simarubaceae. 4 trop. Afr.
- Hansemannia** K. Schum. Leguminosae (I. 1). 4 New Guinea.
- Hansteinia** Oerst. Acanthaceae (IV. B). 4 Mex., C. Am.
- Hapaline** Schott. Araceae (VI). 3 E. Indomal.
- Hapalostephium** D. Don ex Sweet = *Crepis* Vaill. (Comp.).
- Hapaxanthic**, with single flowering.
- Haplanthodes** O. Ktze. = *Haplanthus* Nees (Acanth.).
- Haplanthus** Nees. Acanthaceae (IV. B). 3 Indomal.
- Haplocalymma** Blake (*Viguiera* p.p.). Compositae (5). 1 Mexico.
- Haplocarpha** Less. (*Arctotis* p.p. *EP.*). Compositae (10). 4 Afr.
- Haplochlamydeous**, -stemmonous, with one whorl of P or A.
- Haplochorema** K. Schum. Zingiberaceae (I). 5 Borneo.
- Haplocathra** Benth. Guttiferae (1). 2 N. Brazil. Wood red.
- Haplocoelum** Radlk. Sapindaceae (1). 2 Zanzibar.
- Haplodypsis** Baill. Palmaceae (IV. 1). 2 Madag.
- Haploesthes** A. Gray. Compositae (8). 1 California to Mexico.
- Haplolophium** Endl. (*Aplolophium*). Bignoniaceae (1). 3 Brazil.
- Haplopappus** Endl. (*Apiopappus*). Compositae (3). 125 W. Am.
- Haplopetalon** A. Gray. Rhizophoraceae. 3 Polynesia.
- Haplophloga** Baill. Palmaceae (IV. 1). 2 Madag., Masc.
- Haplophyton** A. DC. Apocynaceae (I. 3). 1 Arizona to Cuba.
- Haplorhus** Engl. Anacardiaceae (3). 1 Peru.
- Haplostachys** Hillebr. Labiatae (III). 3 Hawaiian Is.
- Haplostephium** Mart. ex DC. Compositae (1). 2 Minas Geraes.
- Haplostichanthus** F. Muell. Anonaceae (1). 1 Queensland.
- Haptera**, holdfasts of *Podostemaceae* and *Tristichaceae*.
- Haptocarpum** Ule. Capparidaceae (v). 1 E. Brazil.
- Harbouria** Coulter et Rose (*Thaspium* p.p.). Umbell. (III. 5). 1 U.S.
- Hard fern**, *Blechnum*, *Lomaria*; -hack (Am.), *Spiraea*; -wood tree (W.I.), *Ixora ferrea* Benth.
- Hardenbergia** Benth. (*Kennedy* p.p. *EP.*). Leguminosae (III. 10). 15 Austr. Cult. orn. fl.
- Hardwickia** Roxb. Leguminosae (II. 2). 2 trop. As.
- Hare bell**, *Campanula rotundifolia* L.; -s ear, *Bupleurum*; -s tail grass, *Lagurus*.

- Harfordia** Greene et Perry (*Pterostegia* p.p.). Polygonaceae (I. 1).
 2 California.
- Hargasseria** C. A. Mey. = *Daphnopsis* Mart. (Thymel.).
- Haricot bean**, *Phaseolus vulgaris* L.
- Harina** Buch.-Ham. = *Wallichia* Roxb. (Palmar.).
- Hariota** DC. (*Rhipsalis* p.p.). Cactaceae (III. 3). 2 S. Brazil.
- Harmandia** Pierre. Olacaceae. 1 W. Afr.
- Harmandiella** Costantin. Asclepiadaceae (II. 3). 1 Cochinchina.
- Harmogia** Schau. = *Baeckea* L. p.p. (Myrt.).
- Harmsia** K. Schum. Sterculiaceae. 2 trop. Afr.
- Harmsiopanax** Warb. (*Horsfieldia* Bl.). Araliaceae (2). 2 Malaya.
- Haronga** Thou. Guttiferae (II). 1 trop. Afr., Madag., Maur.
- Harpachne** Hochst. (*Eragrostis* p.p. BH.). Gramineae (10). 1 trop. Afr.
- Harpagonella** A. Gray. Boraginaceae (IV). 1 California.
- Harpagophytum** DC. Pedaliaceae. 4 S. Afr. *H. procumbens* DC. (grapple-plant) fr. is beset with large woody grapples about an inch long, pointed and barbed. It is thus suited to animal distribution, and is troublesome to wool growers (*cf.* *Xanthium*).
- Harpalium** Cass. = *Helianthus* L. (Comp.).
- Harpalyce** Moç. et Sesse ex DC. Leguminosae (III. 6). 6 trop. Am., W.I.
- Harpanema** Decne. in DC. Asclepiadaceae (I). 1 Madag.
- Harpechloa** Kunth. Gramineae (II). 2 S. Afr.
- Harpephyllum** Bernh. ex Krauss. Anacardiaceae (2). 1 S. Afr.
- Harperella** Rose (*Harperia* Rose). Umbelliferae (III. 5). 1 W. U.S.
- Harperia** Fitzgerald. Restionaceae. 1 Austr.
- Harperia** Rose. Umbelliferae (III. 5). 1 N. Am.
- Harpochilus** Nees. Acanthaceae (IV. B). 2 Brazil.
- Harpullia** Roxb. Sapindaceae (II). 25 palaeotrop.
- Harrachia** Jacq. f. = *Crossandra* Salisb. (Acanth.)
- Harrimanella** Coville (*Cassiope* p.p.). Ericaceae (II. 1). 2 boreal.
- Harrisella** Fawcett et Rendle (*Campylocentron* p.p.). Orchidaceae (II. 20). 1 W.I., Florida, Yucatan.
- Harrisia** Britton (*Cereus* p.p.). Cactaceae (III. 1). 7 W.I., Florida.
- Harrisonia** R. Br. Simarubaceae. 5 trop. As. and Afr.
- Hartia** Dunn. Theaceae. 1 China.
- Hartighsea** A. Juss. = *Dysoxylum* Blume (Melia.).
- Hartmannia** DC. = *Hemizonia* p.p. (Comp.).
- Hartmannia** Spach = *Oenothera* L. (BH.) = *Xylopleurum* Spach.
- Hartogia** L. = *Agathosma* Willd. (Rut.).
- Hartogia** L. f. Celastraceae. 2 S. Afr., Madag.
- Hart's tongue fern**, *Phyllitis*, *Scolopendrium*.
- Hartwegia** Lindl. Orchidaceae (II. 6). 2 Centr. Am.
- Hartwrightia** A. Gray. Compositae (2). 1 Florida.
- Harveya** Hook. Scrophulariaceae (III. 2). 20 S. and trop. Afr.
- Some are root parasites, like *Euphrasia*.
- Hashish**, *Cannabis sativa* L.
- Haselhoffia** Lindau. Acanthaceae (IV. A). 2 W. trop. Afr.
- Hasseanthus** Rose (*Sedum* p.p.). Crassulaceae. 4 California.
- Hasselquistia** L. = *Tordylium* L. p.p. (Umbellif.).

- Hasseltia** H. B. et K. Flacourtiaceae (5). 5 Mexico, Andes.
Hasskarlia Baill. Euphorbiaceae (A. II. 2). 2 W. trop. Afr.
Hasslerella Chodat. Scrophulariaceae (III. 1). 1 Argentina.
Hassleropsis Chodat. Scrophulariaceae (II. 1). 1 Paraguay.
Hastate, with two pointed lobes projecting $\perp$ at the base.
Hastingsia S. Wats. (*Schoenolirion* EP.). Liliaceae (III). 4 W. N. Am.
Hats, Panama, Carludovica.
Haulm, stem.
Haussknechtia Boiss. Umbelliferae (III. 6). 1 Persia.
Haussmannia F. Muell. Bignoniaceae (I). 1 Queensland.
Haustoria, the suckers of parasites.
Haustrum Nor. Inc. sed. Nomen.
Hauya (Moç. et Sesse ex) DC. Onagraceae (2). 4 C. Am., Mex., Calif.
Havardia Small (*Pithecolobium* p.p.). Leguminosae (I. 1). 1 N. Am.
Havetia H. B. et K. Guttiferae (v). 1 Colombia.
Havetiopsis Planch. et Triana. Guttiferae (v). 5 Amazon valley.
Havilandia Stapf. Boraginaceae (IV. 4). 1 Borneo.
Hawk-bit, *Leontodon*; -'s beard, *Crepis*; -weed, *Hieracium*.
Haworthia Duval. Liliaceae (III). 60 S. Afr. Xero. with fleshy l., similar in habit to Crassulaceae.
Hawthorn, Crataegus.
Haya Balf. f. Caryophyllaceae (I. 4). 1 Socotra.
Haylockia Herb. Amaryllidaceae (I). 2 temp. S. Am. Like Crocus, with fls. projecting from the soil.
Haynaldia Kanitz (*Lobelia* p.p. EP.). Campanulaceae (III). 4 Brazil.
Haynaldia Schur. (*Agropyron* BH.). Gramineae (12). 2 Medit.
Haynea Schumach. et Thoms. Urticaceae (inc. sed.). 1 trop. Afr.
Hazardia Greene (*Haplopappus* EP.). Compositae (3). 3 California.
Hazel nut, Corylus; - withe, *Hamamelis*.
Head, a mass of sessile fls. on a common recept., *Compositae*; compound -, *Echinops*; cymose -, *Dipsacaceae*, *Haemanthus*.
Headache-weed (W.I.), *Hedyosmum nutans* Sw.
Hearnia F. Muell. (*Aglaia* p.p. EP.). Meliaceae (II). 6 E. Indomal.
Heart pea (W.I.), *Cardiospermum*; -'s ease, *Viola*; -wood, the older wood of a tree trunk, in which no sap runs.
Heath, Calluna, Erica; prickly, *Pernettya*; **St. Dabeoc's** -, *Daboecia*; sea -, *Frankenia*.
Heather, Calluna vulgaris Salisb., *Erica*.
Heaven, tree of, Ailanthus.
Hebanthe Mart. (*Pjaffia* EP.). Amarantaceae (3). 20 trop. Am.
Hebecladus Miers. Solanaceae (2). 7 W. trop. S. Am.
Hebeclinium DC. = *Eupatorium* Tourn. p.p. (Comp.).
Hebecoccus Radlk. Sapindaceae (1). 1 Java.
Hebenstretia L. Scrophulariaceae (II. 7). 30 S. and trop. Afr. The corolla is slit open along the anterior side, and the style and sta. project through the slit.
Hebepetalum Benth. Linaceae. 2 trop. S. Am.
Heberdenia Banks (*Myrsine* p.p. BH.). Myrsinaceae (II). 2 Macronesia, Mexico.
Hebestigma Urb. Leguminosae (III. 6). 1 W.I.
Hebonga Radlk. Simarubaceae. 2 Phil. Is.

- Hecastocleis** A. Gray. Compositae (12). 1 Nevada.
- Hechtia** Klotzsch. Bromeliaceae (2). 15 Mexico. Cult. orn. infl.
- Hecistopteris** J. Sm. Polypodiaceae. 1 trop. Am.
- Heckeldora** Pierre. Meliaceae (III). 2 trop. Afr.
- Heckelia** K. Schum. Menispermaceae. 1 New Guinea.
- Heckeria** Kunth (*Piper* p.p. *EP.*). Piperaceae. 8 trop.
- Hectorella** Hook. f. Portulacaceae. 1 N.Z.
- Hecubaea** DC. (*Helenium* p.p. *EP.*). Compositae (6). 1 Mexico.
- Hedeoma** Pers. Labiatae (VI). 30 Am.
- Hedeomoides** Briq. (*Pogogyne* p.p.). Labiatae (VI). 3 California.
- Hedera** Tourn. ex L. Araliaceae. 3 temp. |*. *H. Helix* L. (ivy) is a root climber. L. dimorphic, those on the climbing shoots lobed, those on the freely projecting shoots that bear the infl. not. The former form leaf-mosaics better. Fls. not very conspicuous, but coming out late in the year are largely visited for the freely exposed honey by flies and wasps.
- Hederella** Stapf (*Dissochaeta* p.p. *EH.*). Melastomac. (I). 4 Mal. Arch.
- Hederopsis** C. B. Clarke. Araliaceae (1). 1 Malay Peninsula.
- Hedge-hog grass** (Am.), *Cenchrus*; **-hyssop** (Am.), *Gratiola*; **-mustard**, *Sisymbrium*, (W.I.) *Chenopodium*; **-nettle** (Am.), *Stachys*; **-parsley**, *Caucalis*.
- Hedona** Lous. (*Lychnis* p.p.). Caryophyllaceae (II. 1). 1 Tibet.
- Hedraeanthus** A. DC. Campanulaceae (I). 12 S.E. Eur., Caucasus.
- Hedraianthera** F. Muell. Celastraceae. 1 E. Austr.
- Hedwigia** Sw. (*Tetragastris* *EP.*). Burseraceae. 3 trop. Am., W.I. *H. balsamifera* Sw. (Antilles) is known as pig's balsam, on account of a legend that wounded pigs rub against the trees to heal wounds with the resin.
- Hedycapnos** Planch. = *Dicentra* Bernh. (Papav.).
- Hedycarya** Forst. Monimiaceae. 10 Austr. to Fiji.
- Hedychium** Koen. Zingiberaceae (I). 30 trop. As., Madag. Rhizome often tuberous. The fl. has a long tube, at the end of which spring the narrow free parts of the petals and the larger staminodes and labellum. The stigma projects just beyond the anther. Cult. orn. fl.
- Hedyosmum** Sw. Chloranthaceae. 20 trop. Am.
- Hedyotis** L. (*Oldenlandia* p.p. *EP.*). Rubiaceae (I. 2). 120 trop.
- Hedypnois** Schreb. = *Rhagadiolus* Tourn.
- Hedypnois** (Tourn.) Scop. (*Leontodon* *BH.*). Compositae (13). 3 Medit.
- Hedysarum** (Tourn.) L. Leguminosae (III. 7), 70 N. temp.*
- Hedyscepe** H. Wendl. et Drude (*Kentia* p.p. *EP.*). Palmaceae (IV. 1). 1 Lord Howe's Island.
- Heeria** Meissn. (*Anaphrenium* E. Mey. *BH.*). Anacardiaceae (3). 12 Afr.
- Heeria** Schlecht. (*Heterocentron* *EP.*). Melastomaceae (I). 6 C. Am. Some sta. attract insects, the others pollinate them (*cf.* *Commelina*).
- Heimia** Link et Otto (*Nesaea* *BH.*). Lythraceae. 2 trop. Am.
- Heinsenienia** K. Schum. Rubiaceae (II. 1). 2 trop. Afr.

- Heinsia** DC. Rubiaceae (I. 8). 5 trop. Afr.
- Heisteria** Jacq. Olacaceae. 25 warm Am., W. Afr.
- Hekistocarpa** Hook. f. Rubiaceae (I. 2). 1 Nigeria.
- Heladena** A. Juss. Malpighiaceae (II). 5 Brazil, Argentina.
- Helcia** Lindl. (*Trichopilia* BH.). Orchidaceae (II. 19). 1 Panama.
- Heldreichia** Boiss. Cruciferae (2). 6 W. As.
- Helenia** L. = *Helenium* L.
- Helenium** L. Compositae (6). 30 W. Am.
- Heleocharis** (*Eleocharis*) R. Br. Cyperaceae (I). 90 cosmop.
- Heleochoa** Host. Gramineae (8). 8 N. palaeotemp. ✓
- Heleogiton** Schult. = *Scirpus* L. (Cyper.).
- Heleophylax** Beauv. = *Scirpus* L. p.p. (Cyper.).
- Helia** Mart. (*Lisianthus* BH.). Gentianaceae (I). 7 trop. S. Am.
- Heliampora** Benth. Sarraceniaceae. 1 Guiana, a pitcher plant (*cf.* *Sarracenia*).
- Helianthella** Torr. et Gray. Compositae (5). 15 W. U.S., Mexico.
- Helianthemum** Tourn. ex Hall. Cistaceae. 125 Eur., Medit., N. Am.
H. vulgare Gaertn. and 3 others in Brit. (rock-rose). Infl. a cincinnus. The fl. contains no honey and is homogamous, with sensitive sta., which move outwards when touched.
- Helianthostylis** Baill. Moraceae (II). 1 Amazon valley.
- Helianthum** Engelm. ex Britton (*Echinodorus* EP.). Alism. 3 N. Am.
- ✓ **Helianthus** L. Compositae (5). 60 Am. ✓ Good for chars. of § 5. In *H. annuus* L. (sunflower) the number of fls. upon the head is often enormous and they show very regular spiral arrangement, probably due (largely) to pressure in the bud. Ray florets neuter. The seeds give oil. *H. tuberosus* L. (Jerusalem artichoke) has subterranean tuberous stems, like potatoes, with well marked 'eyes' (buds in axils of scale-l.).
- Helichrysum** Vaill. ex L. Compositae (4). 350 Eur., As., Afr., Austr.; 150 in S. Afr. Many xero. with hairy surface, decurrent, &c. The dried fl.-heads of some sp. are 'everlastings.'
- Helicia** Lour. Proteaceae (II). 30 Indomal. &c.
- Helicilla** Moq. Chenopodiaceae (B). 1 China.
- Helicodiceros** Schott. Araceae (VII). 1 Corsica, Sardinia, *H. crinitus* Schott (*H. muscivorus* Engl.). The development of the pedate leaf is cymose; the later formed branches grow more slowly than the earlier. The name *muscivorus* is due to the number of flies captured; attracted by the foul smell of the infl. (*cf.* *Arum*) they collect inside the spathe in enormous numbers; it may often be seen tightly packed; when it withers the top closes and they are caught.
- Heliconia** L. Musaceae. 35 trop. Am. Fls. in cincinni; odd sep. post.
- Helicophyllum** Schott (*Eminium* EP.). Araceae (VII). 3 W. As.
- Helicostylis** Tréc. Moraceae (II). 2 Guiana, N. Brazil.
- Helicteres** Pluk. ex L. Sterculiaceae. 45 trop. (exc. Afr.). The fls. become zygomorphic if they happen to be in a horiz. position.
- Helictonema** Pierre. Celastraceae. 1 trop. Afr.
- Helietta** Tul. Rutaceae (IV). 4 trop. Am.
- Heligme** Blume = *Parsonsia* R. Br. (Apocyn.).

- Helinus** E. Mey. ex Endl. Rhamnaceae. 4 palaeotrop.
Helio- (Gr. pref.), sun-; **-trope**, *Heliotropium*; **-tropism**, irritability to light; **winter -trope**, *Petasites*.
Heliocarpus L. Tiliaceae. 5 Mexico to Paraguay.
Heliocarya Bunge. Boraginaceae (IV. 1). 1 Persia.
Heliocereus Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 4 N. Am.
Heliophila Burm. f. ex L. Cruciferae (I). 70 S. Afr.
Heliophytum DC. = *Heliotropium* L. p.p. (Boragin.).
Heliopsis Pers. Compositae (5). 7 Am.
Heliosperma Reichb. (*Silene* p.p. *BH.*). Caryophyllaceae (II. 1). 5 Mountains of S. Eur.
Heliotropium (Tourn.) L. Boraginaceae (III). 220 trop. and temp.
H. peruvianum L. (cherry pie) and others (heliotrope) cult. perf. fls.
Helipterum DC. Compositae (4). 50 Austr., S. Afr. Xero. with persistent invol. of white scaly bracts. Cult. orn. fl.; the dried flower-heads are sold as 'everlastings' (cf. *Helichrysum*, &c.).
Hellebore, *Helleborus*; **white -**, *Veratrum*.
Helleborine Tourn. ex Hall, Pers. = *Serapias* L. (Orchid.).
Helleborine Hill (*Epipactis* p.p.). Orchidaceae (II. 2). 10 N. temp.
Helleborine, *Epipactis*.
Helleborus (Tourn.) L. Ranunculaceae (2). 15 Eur., Medit.; 2 in Brit. (hellebore). Pl. woody below, each shoot from the stock taking several years to reach maturity and flower. Fl. protog., opening early in the year. Cpls. slightly coherent at base. In *H. niger* L. (Christmas rose) the P turns green after the fl. has been fert.
Hellenia Willd. = *Alpinia* L. (Zingib.).
Helleranthus Small (*Verbena* p.p.). Verbenaceae (1). 1 N. Am.
Hellwigia Warb (*Alpinia* p.p.). Zingiberaceae (1). 1 New Guinea.
Helmholtzia F. Muell. Philodraceae. 2 E. Austr., Polynesia.
Helmia Kunth = *Dioscorea* L. p.p. (Dioscor.).
Helminthia Juss. = *Picris* L. p.p. (Comp.).
Helminthocarpum A. Rich. Leguminosae (III. 5). 1 Abyssinia.
Helminthostachys Kaulf. Ophioglossaceae. 1, *H. zeylanica* Hook. f., Ceylon, Himal. to Queensland. Rhiz. dorsiv. with 2-ranked l. on the upper side, and roots below, which do not bear any definite relation to the l. Sporangia peltate, on sporangiophores from the sides of the fertile spike. [Cf. Farmer and Freeman, in *Ann. of Bot.* XIII. 1899, p. 421; Lang on prothallus, do. XVI. 1902, p. 23.]
Helmontia Cogn. Cucurbitaceae (2). 2 Brazil, Guiana.
Helobieae. The 2nd order of Monocotyledons.
Helodea Reichb. = *Elodea* Michx. (Hydrocharit.).
Helodrium (Cl.), a thicket formation.
Helogyne Nutt. Compositae (2). 2 Peru, Bolivia.
Helonias L. Liliaceae (1). 1 east N. Am. Cult. orn. fl.
Heloniopsis A. Gray. Liliaceae (1). 4 Japan, Formosa.
Helopus Trin. = *Eriochloa* H.B. et K. (Gram.).
Helosciadium Koch = *Apium* Tourn. p.p. (Umbellif.).
Helosis Rich. Balanophoraceae. 3 trop. Am.
Helwingia Willd. Cornaceae (Araliac. *BH.*). 3 Himal. to Japan.
Helxine L. = *Polygonum* Tourn. (*BH.*) = *Fagopyrum* Moench.

- Helxine** Reg. Urticaceae (4). 1 Corsica, Sardinia.
- Hemandradenia** Stapf. Connaraceae. 2 trop. Afr.
- Hemarthria** R. Br. (*Rottboellia* p.p. *EP.*). Gramin. (2). 3 warm.
- Hemerocallis** L. Liliaceae (III). 5 temp. Eur., As. Infl. a double bostryx. The fls. of *H. fulva* L. are self-sterile. Cult. orn. fl.
- Hemi-** (Gr. pref.), half, partial; **-cyclic**, part in spirals, part in whorls; **-parasite**, a facultative saprophyte, a parasite which can exist as a saprophyte; **-ptera**, bugs, &c.; **-tropous** (insects), with tongues of medium length, suited to fl.-classes B and B'.
- Hemiandra** R. Br. Labiatae (II). 3 S.W. Austr.
- Hemiarrhena** Benth. Scrophulariaceae (III. 3). 1 trop. Austr.
- Hemiboea** C. B. Clarke. Gesneriaceae (I). 3 China.
- Hemicarex** Benth. (*Kobresia* Willd., *Schoenoxiphium* Nees, *BH.*). Cyperaceae (III). 10 Himalaya, S. Afr.
- Hemicarpha** Nees et Arn. (*Scipus* p.p. *BH.*). *Cyper. (I). 3 trop. and subtrop.
- Hemicarpus** F. Muell. = *Trachymene* Rudge (*BH.*) = *Didiscus* DC.
- Hemichaena** Benth. Scrophulariaceae (II. 4). 1 C. Am.
- Hemichlaena** Schrad. Cyperaceae (I). 3 S. Afr.
- Hemichroa** R. Br. Chenopodiaceae (A). 3 Austr.
- Hemicrambe** Webb. Cruciferae (2). 1 Morocco.
- Hemicyclia** Wight et Arn. Euphorbiaceae (A. I. 1). 10 Indomal.
- Hemidesmus** R. Br. Asclepiadaceae (I). 1 S. India.
- Hemidia** Rafin. Inc. sed. Nomen.
- Hemidiodia** K. Schum. (*Spermacoce* p.p.). Rubiaceae (II. 10). 1 Mexico to Brazil, Malay Archip.
- Hemigenia** R. Br. Labiatae (II). 25 Austr.
- Hemiglochidion** K. Schum. (*Phyllanthus* p.p.). Euphorbiaceae (A. I. 1). 4 New Guinea.
- Hemigraphis** Nees. Acanthaceae (IV. A). 25 trop. As.
- Hemigyrosa** Blume (*Guioa* p.p. *EP.*). Sapindaceae (I). 4 Indomal.
- Hemihabenaria** Finet (*Habenaria* p.p.). Orchid. (II. 1). 3 E. As.
- Hemiheisteria** Van Tiegh. (*Heisteria* p.p.). Olacaceae. 1 S. Am.
- Hemilophia** Franch. Cruciferae (2). 1 Yunnan.
- Hemimeris** L. f., Thunb. Scrophulariaceae (II. 1). 4 S. Afr.
- Hemimeris** Pers. = Alonsoa Ruiz et Pav. (Scroph.).
- Hemionitis** L. Polypodiaceae. 10 trop. Am. and As.
- Hemiorchis** Kurz. Zingiberaceae (I). 3 E. Indomal.
- Hemiphora** F. Muell. Verbenaceae (3). 1 W. Austr.
- Hemiphragma** Wall. Scrophulariaceae (III. 1). 1 Himalaya.
- Hemiphylacus** S. Wats. Liliaceae (III). 1 N. Mexico.
- Hemipilla** Lindl. Orchidaceae (II. 1). 5 Himal., China.
- Hemipogon** Decne. in DC. Asclepiadaceae (II. 1). 7 S. Am.
- Hemisiphonia** Urb. Scrophulariaceae (II. 6). 1 W. Indies.
- Hemistemma** Juss. ex Thou. = *Hibbertia* Andr. p.p. (Dillen.).
- Hemistepta** Bunge (*Saussurea* p.p.). Compositae (II). 1 E. As.
- Hemistylus** Benth. Urticaceae (4). 4 S. Am.
- Hemitelia** Br. Cyatheaceae. 75 trop. and S. temp. Tree-ferns.
- Hemithrinax** Hook. f. (*Thrinax* p.p. *EP.*). Palmaceae (I. 2). 1 Cuba.
- Hemitria** Rafin. Lorantheae (inc. sed.). 1, habitat?
- Hemizonella** A. Gray. Compositae (5). 2 Pacif. U.S.

- Hemizonia** DC. Compositae (5). 25 west N. Am.
Hemizygia Briq. (*Ocimum* p.p. *BH.*). Labiatae (VII). 2 trop. and S. Afr.
Hemlock, *Conium maculatum* L.; -spruce (Am.), *Tsuga canadensis* Carr.; water-, *Cicuta virosa* L.
Hemp, *Cannabis*, *Moraceae*; - agrimony, *Eupatorium cannabinum* L.; bastard -, agrimony (W.I.), *Ageratum conyzoides* L.; **Bombay** -, *Crotalaria juncea* L.; bow-string -, *Sansevieria zeylanica* Willd., &c.; **China** -, *Abutilon*; **Deccan** -, *Hibiscus cannabinus* L.; **Madras** -, cf. *Bombay*; **Manila** -, *Musa textilis* Née; **Mauritius** -, *Furcraea gigantea* Vent.; -nettle, *Galeopsis Tetrakit* L.; **New Zealand** -, *Phormium tenax* Forst.; **sisal** -, *Agave sisalana* Perrine; **sun** -, *Crotalaria juncea* L.
Hemsleya Cogn. Cucurbitaceae (1). 2 S.E. As.
Hen-and-chickens, *Calendula officinalis* L., var.
Hen-bane, *Hyoscyamus niger* L.; -bit, *Lamium amplexicaule* L.
Henckelia Spreng. = *Didymocarpus* Wall. (Gesner.).
Henequen, *Agave fourcroydes* Lem.
Henicosanthum Becc. Anonaceae (1). 1 Borneo.
Henlea Griseb. Malpighiaceae. 1 Cuba.
Henleophytum Karst. (*Henlea* Griseb.). Malpighiaceae. 1 Cuba.
Henna, *Lawsonia inermis* L.
Hennecartia Poisson. Monimiaceae. 1 Paraguay.
Henonia Moq. Amarantaceae (1). 1 Madag.
Henoonia Griseb. Solanaceae (4) (*Sapotaceae BH.*). 1 Cuba.
Henophyton Coss. et Dur. Cruciferae (4). 1 Algeria.
Henosis Hook. f. (*Bulbophyllum* p.p.). Orchid. (II. 16). 1 Brazil.
Henricia Cass. Compositae (3). 1 Madag.
Henriettea DC. Melastomaceae (1). 12 trop. S. Am.
Henriettella Naud. Melastomaceae (1). 20 trop. Am., W.I.
Henriquezia Spruce ex Benth. Rubiaceae (I. 4). 5 N. Braz., Guiana.
Henrya Hemsl. Asclepiadaceae (II. 1). 1 Centr. China.
Henslowia Blume. Santalaceae. 13 Indomal., China.
Hensmania Fitzgerald (*Xerotes* p.p.). Liliaceae (III). 1 Austr.
Hepatica Dill. ex L. = *Anemone* L. p.p. (Ranunc.).
Heppiella Regel. Gesneriaceae (II). 10 trop. S. Am.
Heptacodium Rehder. Caprifoliaceae. 1 China.
Heptacyclum Engl. Menispermaceae. 1 trop. Afr.
Heptandrous, with 7 stamens.
Heptanthus Griseb. Compositae (5). 3 Cuba.
Heptapleurum Gaertn. (*Schefflera EP.*). Araliaceae (1). 70 palaeotrop.
Heracleum L. Umbelliferae (III. 6). 70 N. temp. and trop. Mts. (*H. Sphondylium* L., cow-parsnip, in Brit.).
Herb, a pl. with no woody part above ground; - **Christopher**, *Actaea spicata* L.; - **Bennett**, *Geum*; - **Paris**, *Paris quadrifolia* L.; - **Robert**, *Geranium Robertianum* L.; - **aceous** (l.). thin and green (stem), not woody above ground.
Herbarium, a collection of dried plants.
Herbertia Sweet (*Alophia EP.*). Iridaceae (II). 7 warm Am.
Hercules' Club (Am.), *Aralia spinosa* L.

- Herderia** Cass. Compositae (1). 3 trop. Afr.
- Herd's grass** (Am.), *Phleum pratense* L.
- Heritiera** (Dryand.) Ait. Sterculiaceae. 4 palaeotrop. coasts.
- Herkogamous**, ♂, but incapable of self-fertilisation.
- Hermannia** L. (*BH.* excl. *Mahernia* L.). Sterculiaceae. 120 trop. and sub-trop., chiefly Afr.
- Hermaphrodite** (fl.), with both stamens and carpels (functional).
- Hermas** L. Umbelliferae (1. 2). 5 S. Afr.
- Hermibstaedtia** Reichb. Amarantaceae (1). 10 trop. and S. Afr.
- Hermesia** Humb. et Bonpl. = *Alchornea* Sw. p.p. (Euph.).
- Hermesias** Loefl. (*Brownea BH.*). Legumin. (11. 3). 10 trop. Am, W.I.
- Hermibicchia** × G. Camus, Bergon, et A. Camus. Orchidaceae. Hybrid, *Herminium*—*Gymnadenia* (*Bicchia*).
- Hermidium** S. Wats. Nyctaginaceae. 1 Nevada.
- Herminiera** Guill. et Perr. (*Aeschynomene* p.p. *EP.*). Leguminosae (111. 7). 1 trop. Afr., *H. elaphroxylon* G. et P. Wood light, used for floats, canoes, &c. Cf. with the development of aerenchyma seen in other marsh plants (*Lycopus*, *Jussieu*, &c.).
- Herminium** L. Orchidaceae (11. 1). 8 temp. Eur., As. (*H. Monorchis* R. Br., musk-orchis, in Brit.)
- Hermione** Salisb. = *Narcissus* Tourn. p.p. (Amaryll.).
- Hermodactylus** Tourn. ex Mill. Iridaceae (11). 1 Medit.
- Hernandia** Plum. ex L. Hernandiaceae. 10 trop.
- Hernandiaceae** (*EP.*; *Lauraceae* p.p. *BH.*). Dicotyledons (Archichl. Ranales). 4 gen. 25 sp. trop. Shrubs or trees with alt. exstip. l., oil-cells, and cystoliths. Fl. ♂ or unisexual reg. P 4—10, A in whorl before outer P, $\bar{G}$ 1-loc., with 1 pend. anatr. ov. *Chief genus*: *Hernandia*.
- Herniaria** (Tourn.) L. Caryophyllaceae (1. 4). 20 Medit., Eur., S. Afr. (*H. glabra* L., rupture-wort, in England.) Fl. apetalous.
- Herpestis** Gaertn. f. (*Bacopa EP.*). Scrophulariaceae (11. 6). 50 trop. and subtrop., chiefly Am.
- Herpetacanthus** Nees. Acanthaceae (1V. B). 5 Brazil.
- Herpetica** Cook et Collins, Rafin. (*Cassia* p.p.). Legum. (11. 5). 1 Porto Rico.
- Herpetospermum** Wall. Cucurbitaceae (3). 2 Himal., China.
- Herpolirion** Hook. f. Liliaceae (111). 1 N.Z., Tasm., S.E. Austr.
- Herpysma** Lindl. Orchidaceae (11. 2). 2 Himal., Phil. Is.
- Herpyza** Sauv. (*Teramnus EP.*). Leguminosae (111. 10). 1 Cuba.
- Herrania** Goudot (*Theobroma* p.p. *EP.*). Sterculiaceae. 5 trop. S. Am.
- Herreria** Ruiz et Pav. Liliaceae (11). 3 S. Am.
- Herrickia** Wooton et Standley. Compositae (3). 1 New Mexico.
- Herschelia** Lindl. (*Disa* p.p. *BH.*). Orchid. (11. 1). 3 S. and trop. Afr.
- Hertia** Neck. (*Othonnopsis* p.p. *B.H.*). Compos. (8). 8 W. As., S. Afr.
- Herya** Cordemoy. Celastraceae. 1 Bourbon.
- Hesperaloe** Engelm. Liliaceae (VI). 2 Texas, Mexico.
- Hesperantha** Ker-Gawl. Iridaceae (111). 25 S. and trop. Afr.
- Hesperaster** Cockerell (*Mentzelia* p.p.). Loasaceae. 10 N. Am.

Hesperastragalus A. A. Heller (*Astragalus* p.p.). Leguminosae (III).
6). 4 Calif.

Hesperelaea A. Gray. Oleaceae. 1 Lower California.

Hesperidanthus Rydberg (*Streptanthus* p.p.). Cruc. (I). 1 N. Am.

Hesperidium, the berry of Citrus, &c.

Hesperis L. Cruciferae (4). 25 Eur., Medit.; (1 Brit.). Orn. fl.

Hesperocallis A. Gray. Liliaceae (III). 1 Colorado desert.

Hesperochiron S. Wats. Hydrophyllaceae. 2 W. U.S.

Hesperochloa Rydberg (*Festuca* p.p.). Gramin. (10). 1 Rockies.

Hesperocnide Torr. Urticaceae (1). 3 California, Hawaiian Is.

Hesperodoria Greene (*Bigelowia* p.p.). Compos. (3). 2 W. U.S.

Hesperogenia Coulter et Rose. Umbelliferae (III. 4). 1 N. Am.

Hesperolinon Small (*Linum* p.p.). Linaceae. 10 California.

Hesperomannia A. Gray. Compositae (12). 3 Sandwich Is.

Hesperomecon Greene (*Meconella* Benth.). Papaver. (II). 7 Calif.

Hesperomeles Lindl. = *Osteomeles* Lindl. (Ros.).

Hesperonia Standley (*Mirabilis* p.p.). Nyctaginaceae. 9 N. Am.

Hesperoschordum Lindl. = *Brodiaea* Sm. p.p. (Lili.).

Hesperoxalis Small (*Oxalis* p.p.). Oxalidaceae. 1 N.W. U.S.

Hesperoyucca Baker (*Yucca* p.p.). Liliaceae (VI). 1 Calif.

Hessea Herb. Amaryllidaceae (I). 10 S. Afr. Cult. orn. fl.

Hetaeria Blume. Orchidaceae (II. 2). 20 palaeotrop.

Heter, **hetero-** (Gr. pref.), diverse; **-carpous**, producing more than one kind of fr., *Aethionema*, *Calendula*, *Cardamine*, *Dimorphotheca*; **-chlamydeous**, with P l. of two kinds, K and C; **-cyclic**, with different numbers in different whorls; **-dromous** (aestivation), a right-hand-side fl. the reflection of a left, *Exacum*, *Marantaceae*, *Saintpaulia*; **-gamous**, heterostyled, or in *Compositae*, fls. of different sex in same head; **-merous**, whorls with different numbers of members; **-phyll**, polymorphic l., *Bryophyllum*, *Capsella*, *Dischidia*, *Liriodendron*, *Hedera* and other climbers, many epiphytes, insectivorous plants, and water-plants; **-spory**, presence of two kinds of spores, *Pteridophyta*; **-stylism**, occurrence of two or more kinds of pl. of the same sp., one with e.g. long sta. and short style, the other with short sta. and long style, or long, mid and short sta. and style, *Lythrum*, *Primula*, *Androsace*, *Boraginaceae*, *Bouvardia*, *Eichhornia*, *Erythroxylum*, *Fagopyrum*, *Hottonia*, *Lagerstroemia*, *Linum*, *Lythrum*, *Menyanthes*, *Mitchella*, *Oldenlandia*, *Oxalis*, *Pontederia*, *Primula*, *Psychotria*, *Pulmonaria*, *Rudgea*, *Statice*, *Turneraceae*.

Heterachaena Fres. (*Launaea* p.p. EP.). Compositae (13). 1 Arabia, Abyssinia.

Heterachne Benth. Gramineae (10). 2 N. Austr.

Heteracia Fisch. et Mey. Compositae (13). 1 W. As.

Heteradelphia Lindau. Acanthaceae (IV. A). 1 São Thome.

Heteranthelium Hochst. (*Agropyron* p.p. BII.). Gramineae (12). 1 W. As.

Heteranthera Ruiz et Pav. Pontederiaceae. 10 trop. and subtrop. Am., Afr. L. of two types—linear submerged and orbicular floating. Some have cleist. fls.

Heteranthia Nees et Mart. Scrophulariaceae (inc. sed.). 1 Brazil.

Heteranthoecia Stapf. Gramineae (5). 1 trop. Afr.

Heterapithmos Turcz. Inc. sed. 1 Brazil.

Heterixia Van Tiegh. (*Viscum* p.p.). Loranth. (11). 1 N.Z., Malaya.

Heterocarpus Phil. (*Cardamine* p.p. *BH.*). Crucif. (4). 1 Juan Fern.

Heterocaryum A. DC. = *Echinosperrum* Sw. (*BH.*) = *Lappula* Moench.

Heterocentron Hook. et Arn. (*Heeria* *BH.*). Melastomaceae (1). 6 C. Am., Mex.

Heterochaenia A. DC. Campanulaceae (1). 1 Mascarenes.

Heterochaeta DC. = *Aster* Tourn. p.p. (Compos.).

Heterocodon Nutt. Campanulaceae (1). 1 W. N. Am.

Heterocoma DC. Compositae (1). 1 Brazil.

Heterodendron (um) Desf. Sapindaceae (1). 4 Austr.

Heteroderis Boiss. (*Crepis* p.p. *BH.*). Compositae (13). 2 W. As.

Heterodraha Greene (*Draba* p.p.). Cruciferae (4). 2 Calif.

Heterogaura Rothrock. Onagraceae (2). 1 California.

Heterolaena Sch.-Bip. = *Eupatorium* Tourn. p.p. (Compos.).

Heterolepis Cass. Compositae (4). 3 S. Afr.

Heteromeles M. Roem. (*Photinia* Lindl.). Rosac. (11). 2 Calif.

Heteromerae (*BH.*). The 2nd series of Gamopetalae.

Heteromma Benth. Compositae (3). 1 S. Afr. mts.

Heteromorpha Cham. et Schlechtd. Umbelliferae (111. 5). 3 Afr.

Heteronoma DC. = *Arthrostema* Ruiz et Pav. (Melastom.).

Heteropanax Seem. Araliaceae (1). 1 Fiji.

Heteropappus Less. Compositae (3). 5 China, Japan.

Heteropetalum Benth. Anonaceae (2). 1 N. Brazil.

Heterophragma DC. Bignoniaceae (2). 3 Indomal.

Heterophyllaea Hook. f. Rubiaceae (1. 5). 2 Bolivia, Argentina.

Heteropogon Pers. (*Andropogon* p.p. *EP.*). Gramin. (2). 5 trop.

Heteropsis Kunth. Araceae (1). 8 trop. S. Am.

Heteropteris H. B. et K. Malpighiaceae (1). 100 trop. Am., 1 in trop. Afr. Fr. a samara (*cf.* *Acer*, *Banisteria*).

Heteropyxis Harv. Inc. sed. (Myrt. ?, Lythr. ?). 2 S. Afr.

Heterosciadium Lange. Umbelliferae (111. 2). 1 Spain.

Heterosmilax Kunth. Liliaceae (x1). 5 E. As.

Heterospathe Scheff. Palmaceae (IV. 1). 4 Malay Archip.

Heterospermum Cav. Compositae (5). 6 Arizona to Argentina.

Heterostachys Ung. Sternb. Chenopodiaceae (A). 1 C. and S. Am.

Heterostemma Wight et Arn. Asclepiadaceae (11. 3). 15 Indomal.

Heterostemon Desf. Leguminosae (11. 3). 4 trop. Am.

Heterothalamus Less. Compositae (3). 6 S. Am.

Heterotheca Cass. Compositae (3). 5 W. U.S., Mexico.

Heterothrix Rydberg (*Streptanthus* p.p.). Cruciferae (1). 2 N. Am.

Heterotis Benth. = *Dissotis* Benth. (Melastom.).

Heterotoma Zucc. Campanulaceae (111). 6 Mexico. Cult. orn. fl.

Heterotrichum Bieb. = *Saussurea* DC. (Compos.).

Heterotrichum DC. Melastomaceae (1). 10 trop. Am., some ed. fr.

Heterotropa Morr. et Dcne. = *Asarum* L. p.p. (Aristoloch.).

Heuchera L. Saxifragaceae (1). 30 N. Am., sometimes apet.

Heuffelia Schur. = *Avena* L. p.p. (Gramin.).

Heurnia Spreng. (*Huernia* R. Br.) Asclep. (11. 3). 20 Afr.

- Heurniopsis** N.E. Br. (*Huerniopsis*). Asclep. (II. 3). 1 S. Afr.
- Hevea** Aubl. Euphorbiaceae (A. II. 3). 20 trop. Am. *H. brasiliensis* Müll.-Arg. is the source of the best caoutchouc (Para rubber), largely exported from Brazil. The tree was introduced into Ceylon and the east in 1876, and in recent years a very large planting industry has grown up in it. Incisions, usu. herring-bone-like, are made in the bark, and the latex flows from them. The wound is renewed at intervals of one or two days by shaving off a thin slice from the lower side, when there is a larger flow of milk than at first. The milk is usu. coagulated with the aid of enough acid to neutralise its alkalinity, and the resulting 'biscuits' or sheets are dried, or made into crêpe or other forms. Cf. Willis, *Agriculture in the Tropics*.
- Hewardia** Hook. Liliaceae (inc. sed.). 1 Tasmania.
- Hewittia** Wight et Arn. Convolvulaceae (I). 5 trop.
- Hex-** (Gr. pref.), six; **-androus**, with 6 sta., &c.
- Hexadesmia** Brongn. Orchid. (II. 6). 5 Brazil to Mexico and W.I.
- Hexaglochin** Nieuwland (*Triglochin* p.p.). Juncag. 1 U.S.
- Hexaglottis** Vent. Iridaceae (II). 3 Cape Colony.
- Hexalectris** Rafin. Orchidaceae (II. 7). 2 Mex., S. U.S.
- Hexalobus** A. DC. Anonaceae (3). 8 trop. Afr., Madag.
- Hexaptera** Hook. Cruciferae (I). 6 temp. S. Am. Fr. winged.
- Hexapterella** Urb. Burmanniaceae. 1 Lower Amazon.
- Hexasepalum** Bartl. ex DC. (*Diodia* p.p. *EP.*). Rubi. (II. 10). 1 Mex.
- Hexatheca** C. B. Clarke. Gesneriaceae (I). 1 Borneo.
- Hexisea** Lindl. Orchidaceae (II. 6). 5 Brazil to Mex. and W.I.
- Heylandia** DC. Leguminosae (III. 3). 1 S. India, Ceylon.
- Heynea** Roxb. (*Walsura* p.p. *EP.*). Meliaceae (III). 4 Indomal.
- Heywoodia** Sim. Euphorbiaceae (A. I. 1). 1 Cape Col. (Cape ebony).
- Hians** (Lat.), gaping.
- Hibbertia** Andr. (incl. *Candollea* Labill. 1806). Dilleniaceae. 100 Austr., New Caled. &c. Mostly ericoid or climbing shrubs. Some have phylloclades. Infl. dich., but often, by reduction, coming to look like a raceme. The sta. &c. vary much in number in different sp.
- Hibernation**, remaining 'quiescent' during winter; cf. Bulbs, Corms, Rhizomes, Tubers, Water-plants, *Orchidaceae*, &c.
- Hibiscadelphus** Rock. Malvaceae (4). 3 Hawaiian Is.
- Hibiscus** L. (excl. *Abelmoschus* Medic.). Malvaceae (4). 160 trop. and subtrop. The 5 ante-sepalous sta. are repres. by teeth at the top of the stamen-tube. Several are cult., esp. *H. Rosa-sinensis* L. (shoe-flower, fls. showy), *H. Sabdariffa* L. (Rozelle, fr. for jelly, &c.), *H. (A.) esculentus* L. (Okra or Bandakai, mucilaginous young fr. in soups, &c.).
- Hickory**, *Carya*.
- Hicksbeachia** F. Muell. Proteaceae (II). 1 Austr.
- Hicoria** Rafin. = *Carya* Nutt. (Jugland.).
- Hidalgoa** La Llave. Compositae (5). 2 W.I., C. Am.
- Hiemalis** (Lat.), winter.
- Hieracium** (Tourn.) L. Compositae (13). 450 *, S. Afr., Andes; several in Brit. (hawk-weeds). Innumerable varieties have been raised by various botanists to specific rank (see *London Cat. of Brit. Plants*). Some are parthenogenetic.

- Hiernia** Sp. Moore. Scroph. (III. 2). Formerly Acanth. 1 Angola.
- Hierobotana** Briq. (*Verbena* p.p.). Verben. (1). 1 Colombia.
- Hierochloë** S. G. Gmel. Gramineae (7). 13 temp. and cold. 1 Brit.
- Hieronima** Allem. Euphorbiaceae (A. 1. 1). 10 trop. Am., W.I.
- Hieronymiella** Pax. Amaryllidaceae (1). 1 Argentina.
- Higginsia** Pers. = *Hoffmannia* Sw. (Rubi.).
- Higinbothamia** Uline. Dioscoreaceae. 1 C. Am.
- Hilairella** Van Tiegh. Ochnaceae. 2 Brazil.
- Hilaria** H. B. et K. Gramineae (3). 5 C. Am. to S.W. U.S.
- Hilbertia** Thouin. Inc. sed. Nomen.
- Hildebrandtia** Vatke. Convolvulaceae (1). 2 Afr., As. K enlarged on fr.
- Hillebrandia** Oliv. Begoniaceae. 1 Hawaiian Is.
- Hillieria** Vell. (*Mohlana* BH.). Phytolaccaceae. 3 trop. S. Am.
- Hillia** Jacq. Rubiaceae (1. 5). 5 Brazil to W.I.
- Hilum**, the scar where stalk separates from the seed.
- Himalayan spruce**, *Picea Morinda* Link.
- Himantochilus** T. Anders. Acanthaceae (IV. B). 6 Afr.
- Himantoglossum** Spreng. (*Orchis* p.p. BH.). Orchid. (II. 1). 2 Medit., mid-Eur.
- Himantophyllum** Spreng. = *Clivia* Lindl. p.p. (Amaryll.).
- Himantostemma** A. Gray. Asclepiadaceae (II. 4). 1 N. Am.
- Himeranthus** Endl. (*Jaborosa* p.p. EP.). Solanac. (2). 5 Argentina.
- Hindsia** Benth. Rubiaceae (1. 5). 7 trop. S. Am.
- Hing** (India), asafoetida, *Ferula*.
- Hinterhubera** Sch. Bip. 1855. Compositae (3). 3 Andes.
- Hip**, the fr. of *Rosa*.
- Hippeastrum** Herb. Amaryllidaceae (1). 75 trop. and sub trop. Am. Cult. orn. fl.
- Hippeophyllum** Schlechter (*Oberonia* p.p.). Orchid. (II. 4). 2 N.G.
- Hippia** L. Compositae (7). 4 S. Afr.
- Hippia** L. f. = *Plagiocheilus* Arn. (Comp.).
- Hippia** F. W. Schmidt = *Gentiana* Tourn. p.p. (Gent.).
- Hippobromus** Eckl. et Zeyh. Sapindaceae (II). 1 S. Afr.
- Hippocastanaceae** (EP.; *Sapindaceae* p.p. BH.). Dicots. (Archichl. Sapindales). Only genus *Aesculus* (q.v.).
- Hippocastanum** Tourn. ex Rupp. = *Aesculus* L. p.p. (Hippocast.).
- Hippocratea** L. Hippocrateaceae. 80 trop. Twining shrubs.
- Hippocrateaceae** (EP.; *Celastraceae* p.p. BH.). Dicots. (Archichl. Sapindales). 3 gen., 150 sp. trop. and sub trop. Shrubs, mostly lianes, with opp. or alt. simple l. Fls. in cymes, ♂, reg., with disc. K 5, C 5, A 3 (rarely 5, 4, 2), $\underline{G}$ (3), with 2—10 anatr. ov. in each loc. Berry or schizocarp. No endosp. *Genera*: *Campylostemon*, *Hippocratea*, *Salacia*.
- Hippocrepis** L. Leguminosae (III. 7). 12 Medit., Eur. *H. comosa* L. to Scotland. Fl. mechanism like *Lotus*. Useful fodders.
- Hippodamia** Decne. (*Solenophora* BH.). Gesner. (II). 3 Mex., Costa Rica.
- Hippomane** L. Euphorbiaceae (A. II. 7). 1 C. Am., W. Ind., Columbia (manchineel). Latex poisonous.
- Hippomarathrum** Hoffmg. et Link. Umbelliferae (III. 4). 12 Medit.

Hippophaë L. Elaeagnaceae. 2 N. temp. |*, *H. rhamnoides* L. (sea buckthorn) Brit. In the ♂ fl. the bracteoles form a hood over the sta. in wet weather; when the air is drier, they separate at the sides, and the pollen may be blown away.

Hipposelinum Britton et Rose (*Ligusticum* p.p.). Umb. (III. 5). 1 S. Eur.

Hippotis Ruiz et Pav. Rubiaceae (I. 7). 5 trop. S. Am.

Hippoxylon Rafin. = *Oroxylum* Vent. (Bignon.).

Hippuridaceae (EP.; *Haloragidaceae* p.p. BH.). Dicots. (Archichl. Myrtiflorae). Only genus *Hippuris*, q.v.

Hippuris L. Hippuridaceae. 1, *H. vulgaris* L. (mare's-tail) almost cosmop. A water plant, with creeping rhiz. and erect shoots, whose upper parts usu. project above the water. L. linear, in whorls, the submerged ones longer and more flaccid than the aerial. Fl. sessile in axil of l., ♂ (or sometimes ♀ on some stocks; cf. Labiatae), consisting of 1 epig. sta. and 1 cpl., with 1 pend. ov. and no integuments, and a slight seam representing the K; wind fertilised.

Hiptage Gaertn. Malpighiaceae (I). 10 Mauritius to China.

Hiraea Jacq. (*Mascagnia* Bert.). Malpighiaceae (I). 30 trop. Am.

Hircinus (Lat.), with goatly smell.

Hirpicium Cass. Compositae (10). 2 S. Afr.

Hirschia Baker. Compositae (4). 1 S. Arabia.

Hirsute, with long distinct hairs.

Hirtella L. Rosaceae (VI). 40 S. and Cent. Am., 1 Madag. Fl. †, axis deeply hollowed on one side. The sta. and cpl. are not in the hollow, but on the other side of the surface of the axis.

Hirtus (Lat.), hirsute.

Hisingera Hellm. = *Xylosma* Forst. (Flac.).

Hispid, with rough bristly hairs.

Hispidella Barnad. ex Lam. Compositae (13). 1 Iberian Penins.

Histiopteris (Agardh) J. Sm. Polypodiaceae. 2 warm, and *.

Hitchenia Wall. Zingiberaceae (I). 4 India.

Hitoea Nadeaud. Rubiaceae (II. 4). 1 Society Is.

Hladnikia Koch (*Pleurospermum* p.p. BH.). Umbell. (III. 4). 1 Adriatic.

Hoarea Sweet = *Pelargonium* L'Hérit. p.p. (Geran.).

Hoary, grey with fine pubescence.

Hobble-bush (Am.), *Viburnum*.

Hochstetteria DC. (*Dicoma* p.p. EP.). Compositae (12). 1 trop. Afr., Arabia.

Hockinia Gardn. Gentianaceae (I). 1 Rio de Janeiro.

Hodgkinsonia F. Muell. Rubiaceae (II. 3). 1 S.E. Austr.

Hodgsonia Hook. f. et Thoms. Cucurbitaceae (3). 1 Indomal.

Hodgsoniola F. Muell. Liliaceae (III). 1 S.W. Austr.

Hoeckia Engl. et Graebn. Valerianaceae. 1 China.

Hoehnelia Schweinf. Compositae (1). 1 E. Afr.

Hoelzelia Neck. = *Swartzia* Schreb. (Legum.).

Hoepfneria Vatke (*Abrus* p.p. EP.). Leguminosae (III. 9). 1 trop. Afr.

Hoffmannia Sw. Rubiaceae (I. 8). 24 trop. Am.

Hoffmanniella Schlechter. Compositae. Nomen. 1 trop. Afr.

Hoffmannseggia Cav. Leguminosae (II. 7). 20 S. Afr., S. Am.

- Hofmeisterella** Reichb. f. in Walp. Orchid. (II. 19). 1 Ecuador.
- Hofmeisteria** Walp. Compositae (2). 5 Calif. to Mexico.
- Hog gum** (W.I.), *Moronobea*; **false-** (W.I.), *Rhus Metopium* L.; **-plum**, *Spondias*; **-weed**, (W.I.), *Boerhaavia*; **poisoned -meat or weed** (W.I.), *Aristolochia grandiflora* Sw., (Am.) *Ambrosia artemisiaefolia* L.
- Hohenackeria** Fisch. et Mey. Umbelliferae (III. 5). 2 Medit., W. As.
- Hohenbergia** Schult. f. p.p. (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 18 trop. Am.
- Hoheria** A. Cunn. Malvaceae (2). 3 New Zealand.
- Hoitzia** Juss. = *Loeselia* L. (Polemon.).
- Holacantha** A. Gray. Simarubaceae. 1 New Mexico.
- Holalafia** Stapf. Apocynaceae (II. 1). 1 Guinea.
- Holarrhena** R. Br. Apocynaceae (I. 3). 10 palaeotrop.
- Holboellia** Wall. Lardizabalaceae. 5 Himal., China.
- Holcophacos** Rydberg (*Astragalus* p.p.). Leguminosae (III. 6). 2 N. Am.
- Holcus** L. Gramineae (9). 8 Eur., N. and S. Afr. 2 in Brit., *H. mollis* L., and *H. lanatus* L., Yorkshire fog or soft-grass.
- Holigarna** Buch.-Ham. ex Roxb. Anacardiaceae (4). 5 Indomal.
- Hollandaea** F. Muell. Proteaceae (II). 2 E. Austr.
- Hollisteria** S. Wats. Polygonaceae (I. 1). 1 Calif.
- Hollrungia** K. Schum. Passifloraceae. 1 New Guinea.
- Holly**, *Ilex*; **-fern**, *Aspidium Lonchitis* Sw.; **-hock**, *Althaea*; **-oak** *Quercus Ilex* L.; **-rose** (W.I.), *Turnera*; **sea-**, *Eryngium*.
- Holmbergia** Hicken (*Chenopodium* p.p.). Chenopodiaceae (A). 1 Argent.
- Holmia** Börner = *Cobresia* Pers. p.p. (Cyper.).
- Holmskioldia** Retz. Verbenaceae (4). 4 Madag., trop. Afr., Himal.
- Holo-** (Gr. pref.), complete.
- Holocalyx** M. Micheli. Leguminosae (II. 9). 2 Brazil, Haraguay.
- Holocarpa** Baker (*Pentamisia* *EP.*). Rubiaceae (II. 1). 1 Madag.
- Holocarpa** Greene (*Hemizonia* p.p.). Compositae (5). 1 Calif.
- Holochlamys** Engl. Araceae (II). 2 New Guinea.
- Holochloa** Nutt. = *Heuchera* L. p.p. (Saxifrag.).
- Holodictyum** Maxon (*Asplenium* p.p.). Polypodiaceae. 2 Mexico.
- Holodiscus** Maxim (*Spiraea* p.p. *BH.*). Rosaceae (I. 3). 5 W. N. Am.
- Orn.
- Holographis** Nees. Acanthaceae (IV. B). 1 Mexico.
- Hologyne** Pfitzer (*Coelogyne* p.p.). Orchid. (II. 3). 2 Malay Archip.
- Hololachna** Ehrenb. Tamaricaceae. 2 C. As.
- Holophyllum** Less. = *Athanasia* L. p.p. (Comp.).
- Holopleura** Regel et Schmalh. Umbelliferae (inc. sed.). 1 Turkestan.
- Holoptelea** Planch. Ulmaceae. 1 Indomal.
- Holoschoenus** Link. = *Scirpus* L. p.p. (Cyper.).
- Holostemma** R. Br. Asclepiadaceae (II. 1). 3 Indomal., China.
- Holosteum** Dill. ex L. Caryophyllaceae (I. 1). 6 N. temp. |* (1 Brit.).
- Holostigma** Spach = *Oenothera* L. p.p. (*BH.*) = *Chamissoa* Link.
- Holostylis** Duch. Aristolochiaceae. 1 S. Centr. Brazil.
- Holothrix** L. C. Rich. Orchidaceae (II. 1). 25 Afr., trop. and S.

- Holozonia** Greene (*Lagophylla* p.p. *EP.*). Compositae (5). 1 N. Am.
- Holstia** Pax. Euphorbiaceae (A. II. 2). 2 trop. Afr.
- Holubia** Oliv. Pedaliaceae. 1 S. Afr.
- Holy grass** (Am.), *Hierochloa*.
- Homalanthus** A. Juss. Euphorbiaceae (A. II. 7). 10 Indomal., Polynes.
- Homalium** Jacq. Flacourtiaceae (9). 80 trop. After fert. the sepals or petals, or both, grow large and form wings (often hairy) to the fr.
- Homalobus** Nutt. ex Torr. et Gray (*Astragalus* p.p.). Leguminosae (III. 6). 10 N. Am.
- Homalocalyx** F. Muell. Myrtaceae (II. 2). 2 N.E. Austr.
- Homalomena** Schott. Araceae (v). 80 trop. As. and S. Am.
- Homalopetalum** Rolfe. Orchidaceae (II. 6). 1 Jamaica.
- Homalosciadium** Domin (*Hydrocotyle* p.p.). Umbellif. (I. 1). 1 Austr.
- Homalostachys** Boeck. (*Scleria* p.p. *EP.*). Cyperaceae (II). 1 China.
- Homeria** Vent. Iridaceae (II). 8 S. Afr. Bulbils in axils of lower l. Cult. orn. fl.
- Homilacanthus** Sp. Moore. Acanthaceae (IV. B). 1 E. trop. Afr.
- Hominy**, the meal of maize, *Zea Mays* L.
- Homochaete** Benth. Compositae (4). 1 S. Afr.
- Homochroma** DC. Compositae (3). 1 S. Afr.
- Homogyne** Cass. Compositae (8). 3 Mts. of Eur.
- Homoianthus** Bonpl. ex DC. = *Perezia* Lag. p.p. (Comp.).
- Homoio-**, **Homo-** (Gr. pref.), alike, similar; **-chlamydeous** (P), with l. of one kind only; **-dromous** (aestivation), all l. turned the same way, not to r. in one, to l. in another, fl.; **-gamous** (fl.) one in which sta. and stigma ripen together, and *cf.* *Compositae*; **-geneous**, uniform; **-logous**, equivalent by descent; **-morphous**, uniform in shape; **-nym**, the same specific name of the same pl., in another genus; **-plastic**, equivalent in structure and mode of origin, but of parallel, not common, descent; **-sporous**, with spores of one kind only, *Pteridophyta*.
- Homolepis** Chase (*Panicum* p.p.). Gramineae (5). 3 trop. S. Am.
- Homonoia** Lour. Euphorbiaceae (A. II. 2). 4 Indomal.
- Homonoma** Bello (*Nepsera* *EP.*). Melastomaceae (1). 1 Porto Rico.
- Homopogon** Stapf. Gramineae (2). 1 French Soudan.
- Homoranthus** A. Cunn. ex Schau. Myrtaceae (II. 2). 1 E. Austr.
- Homozeugos** Stapf. Gramineae (2). 1 W. Afr.
- Honckenya** Bartl. = *Arenaria* Rupp. (*BH.*) = *Alsine* Scop. p.p.
- Honckenya** Willd. Tiliaceae. 3 trop. W. Afr.
- Honesty**, *Lunaria biennis* Moench.
- Honey**, a sweet secretion formed (usu. in fl.) by nectaries; *cf.* especially Bee-flowers; **-dew**, *Acer*, *Tilia*; **-guides**, marks, &c. to show the way to the honey, *Myosotis*; **-leaves**, *Berberidaceae*, *Lardizabalaceae*, *Ranunculaceae*; **-locust**, *Gleditschia*; **-palm**, *Jubaea*; **sham-**, *Lopezia*, *Parnassia*; **-suckle**, *Lonicera*, (W.I.) *Desmodium*, *Tecoma*, (Austr.) *Banksia*; **- - French**, *Hedysarum*.
- Hoodia** Sweet. Asclepiadaceae (II. 3). 5 trop. and S. Afr. Cactus-like.
- Hook-climbers**, *cf.* Climbing Plants; **-s on fruit**, &c., aiding animal-dispersal, *cf.* *Agrimonia* (on receptacle), *Bidens* (pappus), *Cenchrus* (sterile spikelets), *Emex* (P), *Geum* (style), *Tragoceros* (C), *Triglochin* (cpl.), *Uncinia* (axis of origin), *Xanthium* (invol.).

Hookera Salisb. = *Brodiaea* Sm. (Lili.).

Hoop pine, *Araucaria*; -tree (W.I.), *Melia*; -withe (W.I.), *Colubrina*, *Rivina*.

Hoorebekia Cornelissen (*Aplopappus* p.p.). Compos. (3). 7 W. Am.

Hop, *Humulus Lupulus* L.

Hopea L. = *Symplocos* L. (Symploc.).

Hopea Roxb. Dipterocarpaceae. 50 Indomal.

Hopkinsia Fitzgerald. Restiaceae. 1 Austr.

Hoplestigma Pierre. Flacourtiaceae (2). 2 trop. Afr.

Hoplestigmataceae, a fam. sometimes made to contain the last.

Hoplophyllum DC. Compositae (1). 2 S. Afr.

Hoplophytum Beer (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 2 Brazil.

Hoppea Willd. Gentianaceae (1). 2 India.

Hoppia Nees (*Bisboeckelera* O. Ktze.). Cyperaceae (11). 5 Brazil, Guiana.

Horaninovia Fisch. et Mey. Chenopodiaceae (3). 3 W. As.

Hordeum (Tourn.) L. Gramineae (12). 20 temp. 4 in Brit. (barley-grass). Spikelets in groups of 3 on the main axis, forming a dense spike. Each is 1-flowered when perfect, but commonly either the central or the two lat. fls. are aborted. The cult. barley is *H. vulgare* L. (*H. sativum* Pers.). The most common form is the var. *distichum* or 2-rowed barley, where the central fl. of each group is fertile, but 6-rowed barley (var. *hexastichum*), and 4-rowed barley or bere, are also grown. The last is the most hardy and is cult. as far as 70° N. (in Norway).

Horehound, *Marrubium vulgare* L.; foetid -, *Ballota nigra* L.; white -, *Marrubium vulgare* L.

Horkelia Cham. et Schlecht. (*Potentilla* p.p. *BH.*). Rosaceae (III. 2). 35 W. U.S.

Horkeliella Rydberg (*Horkelia* p.p.). Rosaceae (III. 2). 3 N. Am.

Hormidium Lindl. ex Heynh. (*Epidendrum* p.p. *EP.*). Orchidaceae (II. 6). 6 C. Am., Cuba.

Horminum Mill. = *Salvia* Tourn. p.p. (Labiata.).

Horminum (Tourn.) L. Labiatae (VI). 1 Mts. of S. Eur.

Hormogyne A. DC. (*Sideroxylon* p.p. *EP.*). Sapotaceae (1). 1 Austr.

Hornea Baker. Sapindaceae (1). 1 Mauritius.

Kornemannia Vahl. Ericaceae (III. 2). 2 Guiana, W.I.

Hornera Jungh. Inc. sed. 2 Japan.

Horn-beam, *Carpinus*; -nut, *Trapa*; - of plenty, *Fedia*; -wort, *Ceratophyllum*.

Hornschuchia Nees. Anonaceae (1). 2 Brazil.

Hornschuchia Spreng. Inc. sed. 1 Brazil.

Hornstedtia Retz (*Anomum* p.p. *BH.*). Zingiberaceae (1). 40 Indomal.

Hornungia Bernh. (*Gagea* p.p.). Liliaceae (IV). 6 Eur.

Horse Cassia (W.I.), *Cassia polyphylla* Jacq.; -chestnut, *Aesculus Hippocastanum* L.; -gram, *Dolichos biflorus* L.; -hair, vegetable, *Tillandsia*; -mint (Am.), *Monarda*; -purslane (W.I.), *Trianthema*; -radish, *Cochlearia Armoracia* L.; -radish tree, *Moringa pterygosperma* Gaertn.; -tail, *Equisetum*; -wood (W.I.), *Calliandra*.

Horsfieldia Bl. ex DC. (*Harmsiopanax* *EP.*). Araliaceae (2). 1 Java.

Horsfieldia Chifflet (*Monophyllaea* Reichb.). Gesner. (1). 1 Java.

- Horsfieldia** Willd. (*Myristica* p.p. *BH.*). Myristicaceae. 50 palaeotrop.
- Horsfordia** A. Gray (*Sida* p.p.). Malvaceae (2). 4 Mexico, Calif.
- Hortensis** (Lat.), of gardens.
- Hortia** Vand. Rutaceae (IV). 4 Brazil.
- Horticulture**, cf. Ornamental Plants.
- Hortonia** Wight. Monimiaceae. 2 Ceylon.
- Hortus siccus**, a herbarium, or collection of dried pl.
- Hosackia** Dougl. Leguminosae (III. 5). 30 W. N. Am.
- Hosea** Dennst. Inc. sed. 1 Indomal.
- Hosea** Ridley. Verbenaceae (4). 1 Penang.
- Hosiea** Hemsl. et E. H. Wilson (*Natsiatum* p.p.). Icacinaceae. 1 China.
- Hoslundia** Vahl. Labiatae (VII). 3 warm Afr.
- Host** (of parasite), the pl. on which it feeds.
- Hosta** Jacq. = *Cornutia* L. (Verben.).
- Hosta** Tratt. (*Funkia* *BH.*). Liliaceae (III). 5 Japan, China. Cf. *Funkia*.
- Hoteia** C. Morr. et Dcne. = *Astilbe* Buch.-Ham. (Saxifr.).
- Hotnima** A. Chevalier. Euphorbiaceae (A. II. 4). 1 trop. Afr.
- Hottentot bread**, *Testudinaria*; -fig, *Mesembryanthemum*.
- **Hottonia** Boerh. ex L. Primulaceae. 2, one N. Am., the other, *H. palustris* L. (water-violet), Siberia and Eur. (incl. Brit.). Floating water pl. with finely-divided submerged l. The fls. project above the water; they are dimorphic like *Primula*.
- Houlletia** Brongn. Orchidaceae (II. 13). 5 trop. S. Am. Cult.
- Hound's tongue**, *Cynoglossum officinale* L.
- Hounea** Baill. Flacourtiaceae (6) (Passifl. *BH.*). 2 trop. Afr., Madag.
- Houseleek**, *Sempervivum*.
- Houstonia** Gronov. ex L. Rubiaceae (I. 2). 20 west N. Am. Fls. heterostyled as in *Primula*; similar differences in stigma and pollen.
- Houttea** Decne. (*Vanhouttea* p.p. *EP.*). Gesneriaceae (II). 3 Brazil.
- Houttuynia** Thunb. Saururaceae. 1 Himalaya to Japan. Parthenogenetic.
- Hovea** R. Br. Leguminosae (III. 3). 12 Austr.
- Hovenia** Thunb. Rhamnaceae. 1 Japan to Himal. Fr. axis ed.
- Hoverdenia** Nees in DC. Acanthaceae (IV. B). 1 Mexico.
- Howardia** Klotzsch = *Aristolochia* L. p.p. (Arist.).
- Howea** Becc. Palmae (IV). 2 Lord Howe's Island. Cult. orn.
- Howellia** A. Gray. Campanulaceae (III). 2 N. Am.
- Howittia** F. Muell. Malvaceae (2). 1 Austr.
- Hoya** R. Br. Asclepiadaceae (II. 3). 100 Indomal., Austr. Twiners and root-climbers with fleshy l. Cult. orn. fl. (wax-flower).
- Hoyopsis** Léveillé. Celastraceae. 1 China.
- Hua** Pierre et de Wild. Sterculiaceae. 1 trop. Afr.
- Huanaca** Cav. (*Azorella* p.p. *EP.*). Umbelliferae (I. 2). 6 S. Am., Austr., Tasm.
- Huberia** DC. Melastomaceae (I). 10 Brazil, Peru.
- Huckleberry**, *Gaylussacia*; blue-, • *Vaccinium pennsylvanicum* Lam.
- Hudsonia** L. Cistaceae. 3 N. Am.
- Huegelia** Benth. = *Gilia* Ruiz et Pav. (Polemon.).

- Huegelia** R. Br. Inc. sed. Nomen.
- Huernia** (*Heurnia*) R. Br. Asclepiadaceae (II. 3). 20 S. and trop. Afr.
- Huerniopsis** N.E. Br. Asclepiadaceae (II. 3). 1 Cape Colony.
- Huerteia** Ruiz et Pav. Staphyleaceae. 2 Peru, Cuba.
- Hufelandia** Nees (*Beilschmiedia* p.p. *BH.*). Lauraceae (II). 1 C. Am.
- Hugeria** Small (*Vaccinium* p.p.). Ericaceae (III. 1). 1 N. Am.
- Hugonia** L. Linaceae. 11 trop. [*]. The lower twigs of the infl. are modified into hooks for climbing.
- Hulletia** King. Moraceae (III). 2 Malay Peninsula.
- Hulsea** Torr. et A. Gray. Compositae (6). 6 W. U.S.
- Humata** Cav. Polypodiaceae. 20 palaeotrop.
- Humbertia** Lam. Convolvulaceae (I). 1 Madag.
- Humble-bees**, cf. Bee-flowers; **robbery by** -, *Aconitum*, *Delphinium*.
- Humblotia** Baill. Euphorbiaceae (A. I. 1). 1 Comoro Is.
- Humboldtia** Vahl (*Batschia* Vahl). Leguminosae (II. 3). 4 Ceylon and S. India. *H. laurifolia* Vahl is myrmecophilous. The non-flowering twigs are normal, but those that bear fls. have hollow obconical internodes. In each of these, at the top, opposite the l., is a slit leading to the cavity which is inhabited by ants.
- Humea** Sm. Compositae (4). 4 S. Austr.
- Humifusus** (Lat.), spreading on surface.
- Humilis** (Lat.), dwarf.
- Humiria** Jaume St. Hil. Humiriaceae. 3 trop. Am.
- Humiriaceae** (*EP.*, *BH.*). Dicots. (Archichl. Geraniales). 3 gen., 20 sp., trop. Am., Afr. Shrubs with alt. l. and $\frac{1}{2}$, reg. fls., 5-merous with 10— ∞ sta. and cup-like disc. Ovules 1—2 per cpl. Drupe. *Chief genera*: *Humiria*, *Saccoglottis*.
- Humming-bird flowers**, *Abutilon*, *Erythrina*, *Marcgravia*.
- Humulus** L. Moraceae (IV). 2 N. temp. Perennial climbing herbs. Infl. cymose, dioec., the δ a much-branched pseudo-panicle, the η a few-flowered pseudo-catkin with 2 fls. in the axil of each scale. Fl. protog., wind fert. Achene. *H. Lupulus* L. is the hop, largely cult.; the fr. catkin is used in brewing, &c.
- Humus**, decaying organic matter in the soil; cf. Saprophytes.
- Hunga** Panch. ex Guillaumin. Elaeocarpaceae. 1 New Caledonia.
- Hunnemannia** Sweet. Papaveraceae (II). 1 Mexico.
- Hunteria** Roxb. Apocynaceae (I. 3). 5 palaeotrop.
- Huntleya** Bateman (*Zygopetalum* p.p. *BH.*). Orchid. (II. 14). 2 trop. Am.
- Huon pine**, *Dacrydium Franklinii* Hook. f.
- Hura** L. Euphorbiaceae (A. II. 7). 2 or 3 trop. Am., incl. *H. crepitans* L., the sand box tree. Fr. with numerous hard woody cpls. Each, as the ripe fr. dries, tries to expand from the Δ shape to a U shape. Presently an explosion occurs and the seeds are shot out. The fr. used to be wired together and used as sand boxes before the era of blotting-paper.
- Husemannia** F. Muell. Menispermaceae. 1 N.E. Austr.
- Husnotia** Fourn. (*Ditassa* p.p. *EP.*). Asclepiadaceae (II. 1). 1 Brazil.
- Hutchinsia** R. Br. Cruciferae (4). 8 N. temp. (1 in Brit.).
- Hutera** Porta (*Coincya* p.p.). Cruciferae (3). 1 Spain.

- Huthia** Brand. Polemoniaceae. 1 Peru.
- Huttonaea** Harv. Orchidaceae (II. 1). 3 S. Afr.
- Huttonella** T. Kirk (*Carmichaelia* p.p.). Legumin. (III. 6). 4 N.Z.
- Huxleya** Ewart. Verbenaceae (4). 1 N. Austr.
- Hyacinth**, *Hyacinthus*; **grape-**, *Muscari*; **wild-**, *Scilla nutans* Sm.
- Hyacinthus** (Tourn.) L. Liliaceae (v). 30 Medit., Afr. Many forms of hyacinth (derived from *H. orientalis* L.) are cult. orn. fl.
- Hyalea** Jaub. et Spach = *Centaurea* L. p.p. (Comp.).
- Hyaline**, transparent.
- Hyalis** D. Don ex Hook. et Arn. (*Plazia* p.p. *EP.*). Comp. (12). 4 S. Am.
- Hyalocalyx** Rolfe. Turneraceae. 2 Madag.
- Hyalocystis** Hallier f. Convolvulaceae (1). 1 trop. Afr.
- Hyaloserris** Griseb. Compositae (12). 2 Mts. of Argentina.
- Hybanthus** Jacq. (*Ionidium* *BH.*). Violaceae. 75 trop. and subtrop.
- Hybophrinium** K. Schum. Marantaceae. 1 Cameroons.
- Hybosperma** Urb. Rhamnaceae. 1 W.I.
- Hybrid**, a cross between two species; **graft-**, *Cytisus*.
- Hydatella** Diels. Centrolepidaceae. 2 W. Austr.
- Hydathodes**, pores through which the pl. excretes water.
- Hydnocarpus** Gaertn. Flacourtiaceae (3). 25 Indomal.
- Hydnophytum** Jack. Rubiaceae (II. 5). 30 E. As., New Guinea, Fiji, &c. Epiphytes with ant-inhabited tubers, like *Myrmecodia* (*q.v.*).
- Hydnora** Thunb. Hydnoraceae. 7 Afr.
- Hydnoraceae** (*EP.*; *Cytinaceae* p.p. *BH.*). Dicots. (Archichl. Aristo-lochiales). 2 gen. with 7 sp., Afr., S. Am. Parasites like *Rafflesiaceae*. Fls. ♂, reg. P (3—4) fleshy, A 3—4 epiphyllous, $\bar{G}$ (3) with parietal plac. and ∞ ov. Berry. Endosp. and perisperm. *Chief genus*: *Hydnora*.
- Hydrangea** Gronov. ex L. Saxifragaceae (III). 25 *. Shrubs with opp. l., some climbing. Fls. in cymose corymbs, the outer (or in cult. forms all) neuter with petaloid calyx, giving conspicuousness to the infl. (*cf.* Compositae, Umbelliferae).
- Hydrangeaceae** (Warming) = Saxifragaceae (§ III).
- Hydrantherium** H. B. et K. Scrophulariaceae (II. 6). 2 trop. S. Am.
- Hydrastis** Ellis. Berberidaceae, sometimes in Ranunculaceae (1). 2, 1 in Japan, 1 in N. Am. (*H. canadensis* L., golden-seal, a tonic).
- Hydrastylis** Steud. = *Sisyrinchium* L. p.p. (Irid.).
- Hydriastele** H. Wendl. et Drude. Palmaceae (IV. 1). 2 Austr.
- Hydrilla** L. C. Rich. Hydrocharidaceae. 1 |*.
- Hydro-** (Gr. pref.), water-; **-chore**, pl. distributed by water; **-philous**, water pollinated, *Zostera*; **-phytes**, *cf.* Water-plants; **-phytium** (Cl.), a water-pl. formation; **-tropism**, irritability to presence of water.
- Hydrobryum** Endl. Podostemaceae. 5 India, Ceylon.
- Hydrocaryaceae**. A family sometimes made to include *Trapa*, usu. placed in Onagraceae.
- Hydrocera** Blume. Balsaminaceae. 1 Indomal.
- Hydrocharideae** (*BH.*) = Hydrocharitaceae.
- Hydrocharis** L. Hydrocharitaceae. 1 Eur. (incl. Brit.), As., *H. Morsus-ranae* L., the frog-bit, a rootless water-pl. with orbicular floating l. Fls. dioec., produced upon the surface. During summer the pl. multiplies by horizontal stolons, which form new pls. at the ends.

In autumn large buds are formed on the stolons and drop off to winter at the bottom. In spring they float up and develop into new pls.

Hydrocharitaceae (*EP.*, *BH.*). Monocots. (Helobieae; Microspermae *BH.*). 13 gen., 65 sp. trop. and temp., all water pl., some marine (Halophila, Enalus, Thalassia). Most have ribbon-like submerged l., a few have floating l. (*Hydrocharis*, &c.); some have l. projecting above the water. In the leaf-axils are 'squamae intravaginales' (*cf.* Potamogetonaceae). Several buds are frequently found in one leaf-axil.

Sexes usu. in different fls., commonly on different plants. Infl. axillary, usu. 1-flowered when ♀, often more than 1 if ♂, enclosed at first in a spathe of two or more (1 in *Hydrocharis* ♀) fused l. Fl. usu. reg., 3-merous. P usu. in two whorls, the outer sepaloïd, the inner petaloïd; sta. in 1—5 whorls, the innermost often staminodial; $\overline{G}$ (2—15), 1-loc. with parietal plac.; ovules ∞ , ortho- to ana-tr., erect to pend.; stigmas as many as cpls. Fr. irreg. dehisc., containing ∞ exalb. seeds. *Chief genera*: Halophila, Elodea, Vallisneria, Stratiotes, *Hydrocharis*.

Hydrochloa Beauv. Gramineae (6). 1 S.E. U.S.

Hydrocleys Rich. Butomaceae. 1 Brazil, *H. nymphoides* Buchenau, a water pl. with striking resemblance to *Nymphaea* or *Limnanthemum*. Cult. orn. fl.

Hydrocotyle (Tourn.) L. Umbelliferae (II. 1). 70 trop. and temp. 1 in Brit., *H. vulgaris* L. (white-rot or pennywort), easily recognised among native U. by its peltate l.

Hydrolea L. Hydrophyllaceae. 12 trop. Several have axillary thorns (branches). Fl. self-fertilising (*cf.* *Phacelia*).

Hydrolirion Léveillé. Hydrocharitaceae. 1 Corea.

Hydrolythrum Hook. f. (*Rotala* p.p. *EP.*). Lythraceae. 1 Indomal.

Hydromystria G. F. W. Mey. (*Limnobium* p.p. *BH.*). Hydrocharitaceae. 3 trop. Am. Cult. orn. fl.

Hydrophyllax L. f. Rubiaceae (II. 10). 3 coasts of Ind. Ocean.

Hydrophyllaceae (*EP.*, *BH.*). Dicot. (Sympet. Tubiflorae; Polemoniales *BH.*). 17 gen. 170 sp., chiefly in N. Am.; a few in S. Am., trop. As., Afr., &c. Herbs or undershrubs with simple or cpd. exstip. l., radical, alt. or opp. Plant usu. hairy. Fls. scattered or in cincinni like those of Boraginaceae, usu. without bracteoles, ♀, reg., usu. 5-merous. K (5), imbr., the odd sepal post.; C (5), rotate, or bell- or funnel-shaped, usu. imbr.; A 5, epipet. and alt. with pets., often with scale-like appendages at base (see below); $\overline{G}$ (2), 1—2-loc., with 1 or 2 styles; ovules on each cpl. ∞ —2, sessile or pend., anatropous. Fr. usu. a loculic. caps. Embryo small, in rich endosp. The fls. are visited chiefly by bees; honey is secreted below the ovary and protected by the appendages of the sta., which are frequently united to the corolla, sometimes (*Hydrophyllum*) forming tubes leading down to the honey. Fl. usu. protandrous. See *Phacelia*. *Chief genera*: *Hydrophyllum*, *Nemophila*, *Phacelia*, *Nama*, *Hydrolea*.

Hydrophyllum L. Hydrophyllaceae. 6 N. Am. Fl. protandrous, with the staminal appendages united to the corolla so as to form tubes through which alone the honey is accessible.

Hydropyrum Link = *Zizania* Gronov. (Gramin.).

Hydropyxis Rafin. Inc. sed. Nomen.

Hydrosme Schott (*Amorphophallus* p.p. *EP.*). Araceae (IV). 15 palaeotrop.

Hydrostachydaceae (*EP.*; *Podostemaceae* p.p. *BH.*). Dicots. Archichl. Rosales). Only genus *Hydrostachys*, *q.v.*

Hydrostachys Thou. Hydrostachydaceae. 10 Madag., Afr. Water pl. of the type of Podostemaceae, with spikes of dioecious naked fl., ♂ of 1 sta., ♀ of (2) cpls. and ∞ ovules. Capsule.

Hydrotaenia Lindl. (*Tigridia* *EP.*). Iridaceae (II). 3 Mex., Peru.

Hydrothrix Hook. f. Pontederiaceae. 1 Ceara.

Hydrotriche Zucc. Scrophulariaceae (II. 6). 1 Madag. Water pl. with dimorphic l.

Hyeronima Allem. Euphorbiaceae (A. I. 1). 12 trop. Am.

Hygea Hanst. Gesneriaceae (inc. sed.). 1 Chili.

Hygea Klotzsch. Asclepiadaceae (inc. sed.). 1 Guiana.

Hygrocharis Hochst. (*Nephrophyllum* *BH.*). Convolvul. (I). 1 Abyss.

Hygrochastic (fr.), one opening by water-absorption.

Hygrochilus Pfitz. (*Vanda* p.p.). Orchidaceae (II. 20). 1 Burma.

Hygrophila R. Br. Acanthaceae (IV. B). 40 trop., in marshes.

Hygrophytic, living with plentiful water supply.

Hygroryza Nees. Gramineae (6). 1 Indomal.

Hylaea, the upper regions of the Amazon valley.

Hyline Herb. Amaryllidaceae (1). 1 Brazil.

Hylum (Cl.), a forest formation.

Hylocereus Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 8 C. Am., W.I.

Hylodendron Taub. Leguminosae (II. 3). 1 Gaboon.

Hylodium (Cl.), a dry open woodland.

Hylomecon Maxim. (*Stylophorum* *BH.*). Papaveraceae (II). 1 Japan.

Hylophila Lindl. Orchidaceae (II. 2). 2 Malaya, Phil. Is.

Hymenachne Beauv. = *Panicum* L. p.p. (Gram.).

✓ **Hymenaea** L. Leguminosae (II. 3). 10 trop. Am. *H. Courbaril* L. (West Indian Locust) has buttress roots. The wood is valuable. From the stem exudes a resin (copal or anime) which is often found in lumps underground near the trees (*cf.* *Agathis*, *Trachylobium*); it is used in varnish, &c.

Hymenandra A. DC. ex Spach. Myrsinaceae (II). 1 Bengal, Assam.

Hymenanthera R. Br. in Tuckey. Violaceae. 4 E. Austr., N.Z., Norfolk I.

✓ **Hymenatherum** Cass. (*Dysodia* p.p. *EP.*). Compositae (6). 15 warm Am.

Hymenella (Moç. et Sesse ex) DC. (*Alsine* p.p. *EP.*). Caryo. (I. 1). 1 Mexico.

Hymenocallis Salisb. Amaryllidaceae (1). 30 trop. Am. The stipular appendages of the sta. are united into a tube, on the summit of which the filaments stand, and which surpasses the perianth in conspicuousness (*cf.* *Eucharis*). Cult. orn. fl.

Hymenocardia Wall. Euphorbiaceae (A. I. 1). 6 trop. Afr. and As.

Hymenocarpos Savi (*Circinus* Med.). Legumin. (III. 5). 1 Medit.

Hymenocharis Salisb. (*Ischnosiphon* p.p.). Marantaceae (II). 20 trop.

Hymenoclea Torr. et A. Gray. Compositae (5). 2 Texas to Calif.

- Hymenocnemis** Hook. f. Rubiaceae (II. 5). 1 Madag.
- Hymenocrater** Fisch. et Mey. Labiatae (VI). 9 W. As.
- Hymenodictyon** Wall. Rubiaceae (I. 5). 8 trop. Afr. and As.
- Hymenolaena** DC. = *Pleurospermum* Hoffm. p.p. (Umbell.).
- Hymenolepis** Cass. = *Athanasia* L. p.p. (Comp.).
- Hymenolepis** Kaulf. Polypodiaceae. 4 Indomal., Madag.
- Hymenolobium** Benth. Leguminosae (III. 8). 1 N. Brazil, Venezuela.
- Hymenolophus** Boerl. Apocynaceae (I. 3). 1 Sumatra.
- Hymenonema** Cass. Compositae (13). 2 Greece.
- Hymenopappus** L'Hérit. Compositae (6). 11 N. Am.
- **Hymenophyllaceae**. Filicales Leptosporangiateae. 2 gen., 400 sp. trop. and temp. (filmy ferns), chiefly in damp woods. Stem very slender, often creeping; sometimes it bears roots, in other cases only root hairs. It grows more rapidly than the l., so that its leafless tip appears naked like a root. L. pinnate, filmy in texture (only one cell thick, except at the veins), with no stomata. The placenta is at the leaf-edge, a continuation of the vein; it bears sporangia and is surrounded by a cup-shaped indusium. Sporangia sessile, with oblique or transv. complete annulus, opening by a longitudinal fissure. The prothalli are capable of long life; in some they produce *gemmae* or buds on the margin, and may thus multiply veg. to a considerable extent.
Chief genera: *Hymenophyllum* (indusium 2-valved), *Trichomanes* (indusium tubular or cup-like).
- **Hymenophyllum** L. Hymenophyllaceae. 250 cosmop. 2 in Brit. (filmy ferns), *H. tunbridgense* Sm. and *H. peltatum* Desv.
- Hymenophysa** C. A. Mey. Cruciferae (inc. sed.). 2 Cent. As.
- Hymenopogon** Wall. Rubiaceae (I. 5). 2 Himal., Assam.
- Hymenoptera**, the bees, wasps, &c.; cf. Bee-flowers.
- Hymenopyramis** Wall. Verbenaceae (5). 1 India, Burma.
- Hymenorchis** Schlechter. Orchidaceae (II. 20). 7 N. Guinea, Java.
- Hymenosicyos** Chiov. Cucurbitaceae (2). 1 E. Afr.
- Hymenosporum** R. Br. ex F. Muell. Pittosporaceae. 1 E. Austr.
- Hymenostegia** Harms. (*Cynometra* p.p.). Leguminosae (II. 2). 3 trop. Afr.
- Hymenostephium** Benth. Compositae (5). 2 Mexico, Colombia.
- Hymenothrix** A. Gray (*Hymenopappus* p.p. EP.). Compos. (6). 2 Mex., Texas.
- Hymenoxys** Cass. (*Actinella* Nutt. p.p. EP.). Compositae (6). 17 Am.
- Hyobanche** L. Scrophulariaceae (III. 2). 2 S. Afr.
- Hyophorbe** Gaertn. Palmae (IV. 1). 3 Mascarenes.
- Hyoscyamus** (Tourn.) L. Solanaceae (2). 11 N. Afr., Eur., As.
H. niger L. (henbane) in Brit., probably an escape, it having formerly been largely cult. as a narcotic. The fls. are in cincinni. The capsule stands erect enclosed in the calyx, and opens by a lid (censer-mechanism).
- Hyoseris** L. Compositae (13). 3 Medit.
- Hyospathe** Mart. Palmaceae (IV. 1). 4 trop. S. Am.
- Hypargyrium** Fourr. = *Potentilla* L. (Ros.).
- Hyparrhenia** Anderss. = *Andropogon* L. p.p. (Gram.).

- Hypocoum** Tourn. ex L. Papaveraceae (I). 12 Medit., Cent. As. Fl. 2-merous throughout. The inner petals are 3-sect, and the middle lobe stands erect and encloses the sta. (cf. Eichler, *Blüthendiagramme*). In *H. procumbens* L. the pollen is shed in the bud into pockets on the inner surface of the inner petals, which close up before the stigma develops. When pressed by an insect the pockets open and dust it with pollen. The stigma only ripens after it has grown above the level of the pollen. Cult. orn. fl.
- Hypelate** P. Br. Sapindaceae (II). 1 W.I., Florida. White ironwood.
- Hyperanthera** Forsk. = *Moringa* Juss. (Moring.).
- Hyperaspis** Briquet. Labiatae (VII). 2 trop. Afr.
- Hyperbaena** Miers (*Pachygone* BH.). Menispermaceae. 12 trop. Am., W.I.
- Hyperborean**, northern.
- Hypericaceae** (Warming: Cistiflorae) = Hypericineae.
- Hypericineae** (BH.; *Guttiferae* p.p. EP.). Dicot. (Polypet., Guttiferales). Cf. *Guttiferae* (classification) for chars.
- Hypericophyllum** Steetz (*Jaumea* Pers.). Compositae (6). 5 trop. Afr.
- Hypericopsis** Boiss. (*Frankenia* p.p. BH.). Frankeniaceae. 1 Persia.
- Hypericum** Tourn. ex L. *Guttiferae* (II). 220 temp. (11 Brit., St John's wort, tutsan, &c.), nearly all perennial herbs with opp., often gland-dotted l. and cymes of fls., often forming pseudo-racemes or -umbels. Sta. ∞ , united into 3 or 5 groups. Developmental study shows that each of these groups arises as a simple papilla, and afterwards branches; a comparison with other *Guttiferae* however shows that in H. we have more probably to do with a union of originally free sta. The fls. contain no honey, but offer abundant pollen, and the larger are frequently visited. They are homogamous, but the stigmas stick out through the sta. and there is thus a chance of a cross.
- Hypertelis** E. Mey. ex Fenzl (*Pharnaceum* p.p. BH.). Aizo. (I). 4 S. Afr.
- Hypertrophy**, excessive development of one part to loss of others.
- Hyphaene** Gaertn. Palmae (II). 15 warm Afr. (doum palms). The stem is frequently branched, a rare occurrence in Palms.
- Hypo-** (Gr. pref.), under; **-cotyl**, the part of the axis below the cotyledons in a seedling; **-crateriform**, salver-shaped; **-dermal**, beneath the epidermis; **-geal** (germination), with cotyledons below ground; **-gynous**, inserted below ovary on a convex receptacle.
- Hypobathrum** Blume. Rubiaceae (I. 8). 3 Malay Archipel.
- Hypocalymma** Endl. Myrtaceae (II. 1). 18 W. Austr.
- Hypocalyptus** Thunb. Leguminosae (III. 3). 1 S. Afr.
- Hypochoeris** L. Compositae (13). 60 N. temp. and S. Am. (3 Brit.).
- Hypocoton** Urb. Euphorbiaceae (A. II. 7). 1 S. Domingo.
- Hypocylix** Woloszczak. Chenopodiaceae (B). 1 Persia.
- Hypocyrta** Mart. Gesneriaceae (I). 12 Brazil, C. Am.
- Hypodaphnis** Stapf (*Ocotea* p.p.). Lauraceae (I). 1 trop. Afr.
- Hypodematium** A. Rich. (*Lissochilus* BH.). Rubiaceae (II. 10). 1 Nile.
- Hypoderris** Br. Polypodiaceae. W. Ind., trop. Am.
- Hypodiscus** Nees. Restionaceae. 15 S. Afr.
- Hypoestes** Soland. Acanthaceae (IV. B). 85 palaeotrop., esp. Madag.

- Hypogomphia** Bunge. Labiatae (VI). 2 W. As.
Hypolaena R. Br. Restionaceae. 30 S. Afr., Austr., N.Z.
Hypolepis Beauv. = *Ficinia* Schrad. (Cyper.).
Hypolepis Bernh. Polypodiaceae. 30 trop. and subtrop.
Hypolobus Fourn. Asclepiadaceae (II. 4). 1 E. Brazil.
Hypolytrum Rich. Cyperaceae (I). 30 trop. and subtrop.
Hypophyllanthus Regel (*Helicteres* p.p. *EP.*). Sterculiaceae (formerly Rutaceae). 1 Colombia.
Hypopitys Dill. ex Adans. = *Monotropa* L. p.p. (Pyrol.).
Hypoporum Nees = *Scleria* Berg. (Cyper.).
Hypoxis L. Amaryllidaceae (III). 60 S. Afr.
Hypsela Presl. Campanulaceae (III). 5 Andes.
Hypseocharis Remy. Oxalidaceae. 3 Andes.
Hypserpa Miers (*Limacia* *BH.*). Menispermaceae. 18 Indomal.
Hypsipodes Miq. Menispermaceae. 1 Java.
Hypsophila F. Muell. Celastraceae. 2 Austr.
Hypsophyllary leaves, bracts.
Hyptiandra Hook. f. Simarubaceae. 1 Queensland.
Hyptianthera Wight et Arn. Rubiaceae (I. 8). 1 N. India.
Hyptiodaphne Urb. (*Daphne* p.p.). Thymelaeaceae. 1 W.I.
Hyptis Jacq. Labiatae (VII). 300 warm Am.
Hyratanandra Miq. = *Pouzolzia* Gaudich. (*BH.*) = *Memorialis* Buch.-Ham.
Hyssop, *Hyssopus officinalis* L.
Hyssopus (Tourn.) L. Labiatae (VI). 1 Eur., Medit., As., *H. officinalis* L., the hyssop, formerly used in medicine.
Hysterionica Willd. Compositae (3). 6 S. Brazil, Argentina.
Hysterophyta (Warming). The last cohort of Choripetalae.
Ianthe Salisb. (*Hypoxis* L.). Amaryllidaceae (III). 20 Afr.
Ibatia Decne. (*Lachnostoma* *BH.*). Asclepiadaceae (II. 4). 3 trop. Am.
Iberidella Boiss. (*Eunomia* *EP.*). Cruciferae (2). 10 Mts. E. Medit.
Iberis Dill. ex L. Cruciferae (2). 30 Eur., As. *I. amara* L. (candy-tuft), cult. orn. fl., a good example of the corymb. The outer petals of the fls. are longer than the rest, thus adding to the conspicuousness (*cf.* Umbelliferae).
Ibidium Salisb. (*Spiranthes* Rich.). Orchid. (II. 2). 20 N. temp.
Iboga J. Braun et K. Schum. (*Tabernanthe* Baill.). Apocynaceae (I. 3). 1 Cameroons.
Iboza N. E. Brown. Labiatae (VI). 12 S. and trop. Afr.
Icacina A. Juss. Icacinaceae. 5 trop. W. Afr.
Icacinaceae (*EP.*; *Olucineae* p.p. *BH.*). Dicots. (Archichl. Sapindales). 38 gen., 200 sp., trop. Trees and shrubs (often lianes) or rarely herbs, with alt. exstip. l., usu. entire and often leathery. Fls. in cpd. paniced infl., reg., usu. ♀. K (5) or (4), not enlarged when the fr. is ripe; C 5 or 4, rarely united, valvate or imbr.; A 5 or 4, alt. with petals, with usu. intr. anthers; disc rarely developed; $\bar{G}$ (3) or rarely (5) or (2), rarely multi-loc., usu. 1-loc. by abortion of the remaining cavities; ovules 2 per loc., pendulous from its apex, anatr., with dorsal raphe and micropyle facing upwards; funicle usu. thickened above the micropyle; style simple with 3 stigmas (or 5—2).

Fr. 1-loc., 1-seeded, usu. a drupe, sometimes a samara. Endosp. usu. present; embryo straight or curved. *Chiefgenera*: Lasianthera, Phytocrene.

Icacorea Aubl. = *Ardisia* Sw. p.p. (Myrsin.).

Icaque (W.I.), *Chrysobalanus Icaco* L.

Ice-plant, *Mesembryanthemum*.

Ichnanthus Beauv. Gramineae (5). 20 trop. Am., W.I.

Ichnocarpus R. Br. Apocynaceae (II. 1). 6 Indomal.

Ichthyothere Mart. in Buchn. Compositae (5). 12 trop. S. Am.

Icianthus Greene (*Streptanthus* p.p.). Cruciferae (1). 3 W. U.S.

Iclea Aubl. = *Protium* Burm. f. (Burs.).

Ikma Phil. (*Baccharis* p.p. EP.). Compositae (12). 1 Chili.

Icomum Hua (*Aeolanthus* p.p. EP.). Labiatae (VII). 5 trop. Afr.

Icosandra Phil. Lauraceae (II). 1 Chili.

Idahoa A. Nelson et Macbride. Cruciferae (2). 1 W. U.S.

Idaneum O. Ktze. et Post = *Adenium* Roem. et Schult. (Apocyn.).

Idesia Maxim. Flacourtiaceae (4). 1 China, Japan.

Ifloga Cass. Compositae (4). 8 S. Afr., Medit.

Iguanura Blume. Palmaceae (IV. 1). 10 Malaya.

Ilang-ilang, *Cananga odorata* Hook. f.

Ildefonsia Gardn. Scrophulariaceae (II. 6). 1 trop. Brazil.

Ilex (Tourn.) L. Aquifoliaceae. 180 Cent. and S. Am., As., Afr., Austr., Eur. *I. Aquifolium* L., the holly, in Brit. Fls. dioecious, but in the ♀ the sterile sta. are so large that the fl. appears ♂. Truly ♂ fls. sometimes occur. *I. paraguensis* A. St Hil. is the Maté or Paraguay tea, largely used in S. Am. The l. contain caffeine; they are dried, broken up and used like tea.

Iliamna Greene (*Malva* p.p.). Malvaceae (2). 4 W. U.S.

Ilicineae (BH.) = Aquifoliaceae.

Ilecebraceae (BH.; *Caryophyllaceae* p.p. EP.). Dicots. (Monochlam. Curvembryae). A fam. unnaturally divorced from its true relationships. Herbs, rarely shrubby, with l. usu. opp. entire, stip. Infl. usu. cymose, fl. usu. ♂, inconspic. P herbaceous or leathery, persistent (4—5), A 4—5, rarely more or less, opp. P; G 1-loc. style 1, rarely 2—3. Ovule 1, rarely 2, amphitr. or anatr. Endosp. Includes the last four groups of § I of Caryophyllaceae.

Ilecebrum Rupp. ex L. Caryophyllaceae (1. 4). 1 W. Eur. (incl. Devon and Cornwall), Medit., W. Afr.

Illegitimate fertilisation, *Lythrum*, *Primula*.

Illicium L. Magnoliaceae. 10 Atl. N. Am., As. *I. verum* Hook. fil. (star-anise; China) is used for flavouring. There is a gradual transition in the spiral P from sepaloid to petaloid structure (cf. *Nymphaea*). The fr. is an aggregate of follicles.

Illigera Blume. Hernandiaceae (Combret. BH.). 10 palaeotrop.

Illipe Koenig, F. Muell. (*Bassia* p.p. BH.). Sapotaceae (1). 35 Indomal.

Ilyphilos Small (*Elatine* p.p.). Elatinaceae. 1 W. U.S. Wild rice.

Ilysanthes Rafin. Scrophulariaceae (II. 6). 25 trop. and subtrop.

Imantina Hook. f. (*Morinda* p.p. EP.). Rubiaceae (II. 9). 1 New Caled.

- Imantophyllum** Benth. et Hook. f. (*Imatophyllum* Hook.) = *Clivia* Lindl. p.p. (Amaryll.).
- Imbricaria** Comm. ex Juss. (*Mimusops* p.p. EP.). Sapotaceae (2). 7 palaeotrop.
- Imbricate** (aestivation, *q.v.*), overlapping.
- Imhofia** Herb. = *Hessea* Herb. p.p. (Amaryll.).
- Immersed** (venation), below surface.
- Immobilis** (Lat.), immoveable.
- Immortelles**, everlastings, *q.v.*
- Imparipinnate** (l.), pinnate with odd leaflet at end.
- Impatiens** Riv. ex L. Balsaminaceae. 340 trop. and N. temp., esp. Mts. of India and Ceylon. *I. Noli-tangere* L., the touch-me-not, in Brit. The name is derived from the explosive fr., a caps. with fleshy pericarp; the outer layers of cells are highly turgid and thus a great strain is put upon the whole. Dehiscence is septifragal and is started by a touch when the fr. is ripe. The valves roll up inwards with violence (starting at the base) and the seeds are scattered in all directions. Many cult. orn. fl.
- Imperata** Cyrilli. Gramineae (2). 6 trop. and subtrop. *I. arundinacea* Cyrilli (alang) is a very troublesome weed in Malaya.
- Imperatoria** (Tourn.) L. = *Peucedanum* Tourn. p.p. (Umbell.).
- Imphee**, *Sorghum vulgare* Pers., var.
- Inaequale** (Lat.), unequal.
- Inarticulate**, not jointed.
- Incanus** (Lat.), hoary-white.
- Incarvillea** Juss. Bignoniaceae (2). 5 E. and Cent. As. L. alt.
- Incense**, *Boswellia*, *Dacryodes*, *Styrax*.
- Incertae sedis**, of uncertain position. Numerous gen. here given are so described, usu. because their original descriptions leave much to the imagination, but sometimes because of real difficulty in placing them.
- Incised** (l.), notched at the margin.
- Included**, not projecting.
- Incompletae** (BH.) = Monochlamydeae.
- Incomplete** (fl.), wanting one or more kinds of organs.
- Incumbent**, *Cruciferae*.
- Incurved**, bending inwards.
- Indefinite** (growth), continuing till checked by the cold; (infl.), with the first axis not ending in a fl.
- Indehiscent**, not opening.
- Indeterminate** (infl.), indefinite.
- Indian almond**, *Terminalia Catappa* L.; -bean (Am.), *Catalpa*; -butter tree, *Bassia butyracea* Roxb.; -chickweed (Am.), *Mollugo*; -copal, *Vateria indica* L.; -cork tree, *Millingtonia hortensis* L. f.; -corn, *Zea Mays* L.; -cress, *Tropaeolum*; -date, *Tamarindus*; -fig, *Opuntia*; -grass (Am.), *Sorghum*; -hemp, *Cannabis sativa* L.; -lilac, *Melia*, *Lagerstroemia*; -liquorice, *Abrus precatorius* L.; -madder, *Rubia cordifolia* L.; -mallow (Am.), *Abutilon*; -meal, *Zea Mays* L.; -millet, *Panicum*; -mulberry, *Morinda citrifolia* L.; -physic (Am.), *Gillenla*; -pink, *Spigelia*; -pipe (Am.), *Monotropa*; -redwood, *Chickrassia tabularis* A. Juss.; -rice, *Zizania aquatica* L.; -rubber, cf. Rubber; -shot, *Canna*; -tobacco (Am.), *Lobelia inflata* L.; -turnip (Am.), *Arisaema*.

Indigenous, genuinely native.

Indigo, *Indigofera*; **China green** -, *Rhamnus chlorophora* Decne.; **Chinese** -, *Polygonum tinctorium* Ait.

Indigofera L. Leguminosae (III. 6). 300 trop. *I. leptostachya* DC., *tinctoria* L. and *Anil* L. furnish indigo. The plant is mown just before flowering, and soaked in water, whereby a yellowish solution is obtained. This on stirring and exposure to the air oxidises, and an insoluble precipitate of indigo is formed. The fls. are slightly explosive (*cf.* Genista).

Indokingia Hemsl. Araliaceae (I). 1 Seychelles.

Indomalaya, *cf.* Floral Regions, II (6) and (7).

Indovethia Boerlage. Ochnaceae (Violaceae *BH.*). 1 Borneo.

Induplicate (aestivation), leaf margins turned inwards; (vernation), *Palmae*.

Indusium, *Filicales*, *Pteridophyta*.

Inermis (Lat.), unarmed, thornless.

Inferae (*BH.*). The 1st series of Gamopetalae.

Inferior (ovary), enclosed in the receptacle.

Inflexed, bent inwards.

Inflorescence, the reproductive shoot, composed of, or bearing, a number of shoots of limited growth, termed flowers. Of two types, monopodial or *racemose*, where the first axis does not as a rule terminate in a fl., but grows steadily onwards; and sympodial or *cymose*, where the main axis soon terminates in a fl., and the growth is taken up by the lat. axes in succession. The typical *raceme* has an axis growing indefinitely up the middle, and successively younger fls. on lat. branches, *Cruciferae*, *Prunus*, *Ribes*. There are also the *cpd.* *raceme* or *panicle*, the *raceme* with sessile fls. or *spike*, with its var. the *catkin* or pendulous spike, the *corymb*, or *raceme* with all the fl. stalks elongating to the same level, *Iberis*, the *umbel*, which may be imagined as a *corymb* with all the fls. springing from one point, *Umbelliferae*, the *cpd.* *umbel*, the *head*, which is a common receptacle with the fls. arranged in a dense mass with the youngest to the centre, *Compositae*, the *cpd.* *head*. The *cyme* may be *mono*-, *di*- or *pleiochasial*, according as each branch bears upon itself 1, 2 or more branches; *cf.* *dichasial* cymes, &c. Many pl. possess mixed infls., with some branchings *racemose*, some *cymose*, *Aesculus*, *Betulaceae*, *Labiatae*, *Verbascum*.

Infundibuliform, funnel-shaped.

Inga Scop. Leguminosae (I. 1). 150 trop. and subtrop. Am., W.I.

Ingenhouzia (Moç. et Sesse ex) DC. Malvaceae (4). 2 Mexico.

Ink berry (W.I.), *Randia aculeata* L.; - **nut**, *Semecarpus Anacardium* L. f., *Terminalia*.

Innate (anther), joined to filament by its base.

Inobulbum Schlechter et Kränzlin (*Dendrobium* p.p.). Orchidaceae (II. 15). 2 New Caledonia.

Inocarpus Forst. Leguminosae (III. 8). 1 Malaya, Polynesia. Seed ed.

Inodes O. F. Cook (*Sabal* p.p.). Palmaceae (I. 2). 9 N. Am., W.I.

Inrolled leaf, *Capparidaceae*, *Empetrum*.

Insect powder, *Chrysanthemum*.

Insectivorous plants, pl. which capture insects, &c., by special apparatus, and absorb the resulting products, whether after a special fermentation, or as humus. About 400 spp. belonging to Droseraceae (*Aldrovanda*, *Dionaea*, *Drosera*, *Drosophyllum*, &c.), Cephalotaceae (*Cephalotus*), Lentibulariaceae (*Pinguicula*, *Utricularia*, &c.), Nepenthaceae (*Nepenthes*), and Sarraceniaceae (*Sarracenia*, &c.). Cf. gen. mentioned for details, and Darwin, *Insectivorous Plants*.

Insertion of leaves, mode of union with stem; cf. Leaf.

Insignis (Lat.), notable.

Insolation, exposure to sun.

Integrifolius (Lat.), simple-leaved.

Integuments, the coats of the ovule.

Inter- (Lat. pref.), between; **-calary** (growth), at a point between apex and base; **-cellular spaces**, air spaces in leaves, &c.; **-node**, the space between a leaf and the next above it; **-petiolar stipules**, *Rubiaceae*.

Interruptedly pinnate, with alt. large and small leaflets, *Rosaceae*.

Intrapetiolar stipules, *Rubiaceae*.

Introrse (anther), opening towards centre of fl.

Intruded, projecting forwards.

Intsia Thou. (*Afzelia* p.p.). Leguminosae (II. 3). 8 palaeotrop.

Inula L. Compositae (4). 100 Eur., As., Afr. (4 in Brit.). The root of *I. Helenium* L., the elecampane, is officinal.

Inulin, a carbohydrate.

Inulopsis O. Hoffm. (*Aplopappus* p.p.). Compositae (3). 1 S. Brazil.

Inversodicraea Engl. ex R. E. Fries. Podostemaceae. 1 Victoria Falls.

Inverted flower, *Clitoria*, *Campanulaceae*, *Orchidaceae*.

Involucel, secondary involucre, *Umbelliferae*.

Involucre, a whorl of bracts, usu. in condensed infls., *Anemone*, *Compositae*, *Eranthis*, *Umbelliferae*.

Involute (vernation), margins rolled inwards.

Inyonia M. E. Jones. Compositae (inc. sed.). 1 N. Am.

Iochroma Benth. Solanaceae (II. 2). 15 trop. Am. *I. macrocalyx* Miers shows protection of the fl.-buds, as in *Spathodea*, by watery secretion between K and C. Cult. orn. fl.

Iodanthus Torr. et Gray. Cruciferae (2). 1 Atl. N. Am.

Iodes Blume. Icacinaceae. 6 trop. As., Afr., Madag.

Iodina Hook. et Arn. Santalaceae. 1 temp. S. Am.

Ionactis Greene (*Aster* p.p.). Compositae (3). 3 N. Am.

Ione Lindl. (*Bulbophyllum* p.p. *BH.*). Orchid. (II. 16). 5 Indomal.

Ionidium Vent. Violaceae. 50 trop. and subtrop. The roots of *I. Ipecacuanha* Vent. are used in medicine (white Ipecacuanha) in the same way as the true drug (*Uragoga*).

Ionopsidium Rchb. (*Cochlearia* p.p. *BH.*). 1 Portugal, *I. acaule* Rchb. with sol. fls. in the axils of radical leaves.

Ionopsis H. B. et K. Orchidaceae (II. 19). 10 trop. Am., epiphytes.

Ionoxalis Small (*Oxalis* p.p.). Oxalidaceae. 70 N. Am.

Iostephane Benth. Compositae (5). 2 Mexico.

Ipecacuanha Arruda = *Psychotria* L. (*BH.*) = *Uragoga* L.

Ipecacuanha, *Uragoga Ipecacuanha* Baill.; **bastard** - (W.I.), *Asclepias curassavica* L.; **white** -, *Ionidium Ipecacuanha* Vent.

- Ipfigenia** Kunth. Liliaceae (1). 8 S. Afr. and Madag. to N.Z.
- Ipfigiona** Cass. Compositae (4). 10 S. Afr. to Turkestan.
- Ipnum** Phil. (*Diplachne* p.p. *EP.*). Gramineae (10). 1 temp. S. Am.
- Ipomoea** L. (*BH.* incl. *Aniseia*, *Batatas*, *Calonyction* and *Exogonium* of Choisy, *Mina* Cerv., *Operculina* Silva Manso, *Pharbitis* Choisy, and *Quamoclit* Moench.). Convolvulaceae (I. 4). 310 trop. and warm temp., chiefly climbing herbs or shrubs; many cult. orn. fls. (e.g. *I. purpurea* Roth, the morning glory). *I. biloba* Forst. is a char. creeping pl. of trop. beaches. *I. Batatas* Lam. (*B. edulis* Choisy) is the sweet potato, largely cultivated in warm countries for its tubers, which are used like potatoes. *I. (Exogonium) Purga* Hayne is the jalap; its rhizome gives off turnip-like roots about the size of apples. Worm-eaten tubers are most valuable, as the non-resinous parts are eaten.
- Ipomopsis** Michx. = *Gilia* Ruiz et Pav. p.p. (Polemon.).
- Ipsa** Lindl. (*Pachystoma* *BH.*). Orchidaceae (II. 9). 3 trop. Afr. and As.
- Iré** rubber, *Funtumia elastica* Stapf.
- Iresine** P. Br. Amarantaceae (3). 25 Am., Afr.
- Iriarte** Ruiz et Pav. Palmae (IV. 1). 10 trop. S. Am. The stem is supported on aerial roots (cf. *Pandanus*). Some of the branches of these roots are thorny (cf. *Acanthorhiza*). In *I. ventricosa* Mart. (Paxiuba palm), the stem has a peculiar egg-like thickening about half-way up (cf. Bombacaceae, *Jatropha*).
- Iriartella** H. Wendl. (*Iriarte* p.p. *EP.*). Palmaceae (IV. 1). 1 Amazon.
- Iridaceae** (*EP.*, *BH.*). Monocotyledons (Liliiflorae; Epigynae *BH.*). 57 gen., 800 sp. trop. and temp.; the chief centres of distr. S. Afr. and trop. Am. Chiefly herbs with a sympodial tuber or rhizome below ground. L. usu. equitant in two ranks. Infl. term., cymose (1 fl. only in Crocoideae). Fl. ♂, reg. or ♂. P 3+3, petaloid, united below into a long or short tube; A 3 (the outer whorl), with extr. anthers; $\bar{G}$ (3), 3-loc., with axile plac. (rarely 1-loc. with parietal plac.); style usu. trifid and frequently $\pm$ petaloid. Ovules usu. ∞ , anatr. Loculic. caps. Embryo small, in hard endosp.
- Classification and chief genera* (after Pax):
- I. **CROCOIDEAE** (fl. solitary, or several developed centrifugally round a central one; plant small; l. not exactly in $\frac{1}{2}$ phyllotaxy): *Crocus*, *Romulea*.
 - II. **IRIDOIDEAE** (fls. numerous, in spathes, several in each, usu. reg.; stem distinct; l. equitant): *Iris*, *Moraea*, *Tigridia*, *Sisyrinchium*.
 - III. **IXIOIDEAE** (similar, but spathes 1-flowered; fl. often zygomorphic): *Ixia*, *Tritonia*, *Gladiolus*, *Freesia*.
- Irideae** (*BH.*) = Iridaceae.
- Iris** Tourn. ex L. Iridaceae (II). 125 N. temp. 2 in Brit., *I. Pseudacorus* L., the yellow flag, and *I. foetidissima* L., the gladdon. Many cult. orn. fl. Most have a sympodial rhiz. with equitant isobilat. l., and small cymes of fls. in spathes. P petaloid, the sepals usu. bending downwards at the outer ends; opp. to them and almost resting on them are the petaloid styles, under which are the sta. with their extr. anthers. Just above the anther, on the outer side of the style, is a

little flap, whose upper surface is the stigma. Bees entering the fl. to get the honey secreted by the ovary rub off their pollen upon the stigma; going farther in they get fresh pollen; and when they come out close the stigma flap, which prevents self-fert. (*cf.* *Viola*). The flat seeds are suited to wind-distr.

The dried rhiz. of *I. florentina* L. (Orris root) smells like violets, and is used in perfumery; 'essence of violets' is made from it.

Iribachia Mart. (*Lisianthus* BH.). Gentianaceae (I). 3 trop. S. Am.

Irmischia Schlechtd. (*Metastelma* BH.). Asclepiad. (II. 1). 3 Mex., W.I.

Iron bark, *Eucalyptus*; - **shrub** (W.I.), *Sauvagesia erecta* L.; - **weed** (Am.), *Vernonia*; - **wood**, *Mesua*, &c., applied to different woods in different countries.

Irregular (fl.), one in which any whorl has members not all alike.

Irritability, sensitiveness to stimuli.

Irvingella Van Tiegh. (*Irvingia* p.p.). Simarub. 10 trop. Afr. and As.

Irvingia Hook. f. Simarubaceae. 8 trop. Afr. and As. Butters from the seeds (cay-cay, dika, &c.).

Iryanthera Warb. (*Myristica* p.p. BH.). Myristicaceae. 4 N. trop. S. Am.

Isabelia Barb. Rodr. Orchidaceae (II. 6). 1 Brazil.

Isachne R. Br. Gramineae (5). 30 trop. and sub trop.

Isandra F. Muell. Solanaceae (inc. sed.). 1 Austr.

Isanthera Nees. Gesneriaceae (I). 3 Indomal.

Isanthus L. C. Rich. in Michx. Labiatae (I). 1 N. Am.

Isatis Tourn. ex L. Cruciferae (2). 50 Medit., Eur., As. *I. tinctoria*

L. is the woad, largely used as a dye before the introduction of indigo.

It is prepared by grinding the leaves to a paste and fermenting them.

[*Nature*, 55, pp. 36, 79; 61, pp. 331, 563.]

Ischaemum L. Gramineae (2). 40 trop. and sub trop.

Ischarum Blume = *Biarum* Schott (Araceae).

Ischnea F. Muell. Compositae (7). 1 New Guinea.

Ischnocentrum Schlechter. Orchidaceae (II. a. III). New Guinea.

Ischnochloa Hook. f. Gramineae (2). 1 N.W. Himalaya.

Ischnogyne Schlechter. Orchidaceae (II. 16). 1 Yunnan.

Ischnolepis Jumelle et Perrier. Asclepiadaceae (I). 1 Madag.

Ischnosiphon Koern. Marantaceae. 20 trop. Am.

Ischnostemma King et Gamble. Asclepiadaceae (II. 1). 1 Malaya.

Ischnurus Balf. f. Gramineae (12). 1 Socotra.

Isellema Anderss. (*Anthistiria* p.p. BH.). Gramineae (2). 5 Indomal.

Isertia Schreb. Rubiaceae (I. 7). 10 S. Am.

Isidorea A. Rich. Rubiaceae (I. 1). 1 W.I.

Island floras, *cf.* Wallace, *Island Life*, Willis in *Ann. Bot.* 1916-17.

Ismene Salisb. = *Hymenocallis* Salisb. (Amaryllid.).

Isnardia L. = *Ludwigia* L. (Onagrac.).

Iso- (Gr. pref.), equal, especially in number; -**bilateral** (I.), with symmetrical internal structure, and edge to the light, *Acorus*, *Asphodelus*, *Eucalyptus*, *Gladiolus*, *Narthecium*; -**diametric**, of equal diameters; -**merous**, with equal numbers in every whorl; -**sporous**, with all spores alike; -**stemonous**, with sta. in one whorl, as many as P.

Isoberlinia Craib et Stapf. Leguminosae (II. 3). 2 Nigeria.

Isocarpha R. Br. Compositae (5). 5 Texas to Peru, W.I.

Isochilus R. Br. Orchidaceae (II. 6). 5 trop. Am., W.I.

Isochoriste Miq. Acanthaceae (IV. B). 2 Java, Angola.

Isocoma Nutt. (*Bigelovia* p.p.). Compositae (3). 10 N. Am.

Isodendron A. Gray. Violaceae. 3 Hawaiian Is.

Isodesmia Gardn. Leguminosae (III. 7). 2 Brazil.

Isoetaceae. Isoetales. Only genus *Isoetes* (q.v.).

Isoetales. A class of Pteridophyta. Only fam. Isoetaceae.

Isoetes L. Isoetaceae. 50 temp. and trop. *I. lacustris* L. is the quill-wort of Brit. lakes, and *I. echinospora* Dur. is also found. Most are aquatics with short stout rhizomes and awl-shaped l., the habit being like that of *Littorella*, with which I. is frequently confused. The stem grows in thickness, but very slowly. The l. spread out at the base and sheath the stem. There are a number of roots, which branch dichotomously. Above the base of each l., on the inner side, is a large sporangium sunk in the tissue. The outer l. have micro-, the inner mega-, sporangia, whilst the innermost l. of all are usu. small and not sporangiferous. The sporangia are imperfectly chambered up by strands of tissue (*trabeculae*) running across them from front to back. The germination of the spores and the development of the embryo resemble the corresponding processes in *Selaginella*.

I. is frequently placed with Eusporangiate Filicales (see Campbell, *Mosses and Ferns*). It differs so much from other Pteridophyta that determination of its relationships is of great difficulty.

Isoetopsis Turcz. Compositae (7). 1 temp. Austr.

Isoglossa Oerst. Acanthaceae (IV. B). 30 Afr., Madag.

Isolepis R. Br. = *Scirpus* L. p.p. (Cyper.).

Isolobus A. DC. = *Lobelia* L. p.p. (Campan.).

Isoloma Decne. (*Kohleria* Regel). Gesneraceae (II). 40 trop. Am.

Several sp. form runners above ground, thickly covered with scaly l.

Isolona Engl. Anonaceae (5). 15 trop. Afr., Madag.

Isomeris Nutt. Capparidaceae (V). 1 Calif.

Isonandra Wight. Sapotaceae (I). 10 Indomal. Cf. *Palaquium*.

Isonema R. Br. Apocynaceae (II. 2). 3 W. Afr.

Isopetalum Sweet = *Pelargonium* L'Hérit. p.p. (Geran.).

Isophyllum Hoffm. = *Bupleurum* Tourn. (Umbell.).

Isoplexis Lindl. (*Digitalis* p.p. EP.). Scrophulariaceae (III. 1). 2 Canaries, Madeira.

Isopogon R. Br. ex Knight. Proteaceae (I). 30 Austr.

Isoptera Scheff. ex Burck. Dipterocarpaceae. 1 Malaya.

Isopyrum L. Ranunculaceae (2). 20 As., N. Am.

Isostigma Less. Compositae (5). 10 Brazil, Argentina, on campos.

Isotoma Lindl. Campanulaceae (III). 8 Austr., W.I., Society Is.

Isotropis Benth. Leguminosae (III. 2). 10 Austr.

Ispaghul seed, *Plantago ovata* Forst.

Istle, ixtle, *Agave*.

Italian millet, *Setaria*.

Itatiaia Ule. Melastomaceae (I). 1 Itatiaia Mt. (near Rio).

Itea Gronov. ex L. Saxifragaceae (V). 6 E. As., Atl. N. Am.

Iteadaphne Blume. Lauraceae (II). 1 Java, Sumatra.

Itoa Hemsl. Flacourtiaceae (4). 1 China.

- Iva** L. Compositae (5). 15 N. and C. Am., W.I.
Ivesia Torr. et Gray (*Potentilla* p.p. *BH*). Rosac. (III. 2). 20 W. U.S.
Ivonla Vell. Inc. sed. 1 Brazil.
Ivory nut, - palm, vegetable -, *Phytelephas*.
Ivy, *Hedera Helix* L.; ground-, *Nepeta Glechoma* Benth.; -leaved bell-flower, *Wahlenbergia*; -leaved toadflax, *Linaria*; poison-, *Rhus Toxicodendron* L.
Ixanthus Griseb. Gentianaceae (1). 1 Canaries.
Ixerba A. Cunn. Saxifragaceae (v). 1 northern N.Z.
Ixia L. Iridaceae (III). 25 S. Afr. Cult. orn. fl.
Ixianthes Benth. Scrophulariaceae (II. 4). 1 S. Afr.
Ixiolaena Benth. Compositae (4). 5 Austr.
Ixiolirion Fisch. Amaryllidaceae (1). 2 W. As.
Ixodia R. Br. Compositae (4). 1 Victoria, S. Australia.
Ixonanthes Jack. Linaceae. 8 trop. As.
Ixophorus Schlecht. (*Setaria* p.p. *BH*). Gramineae (5). 2 Mexico.
Ixora L. Rubiaceae (II. 4). 150 trop. The fl. is commonly red with a long narrow tube, and probably butterfly-visited.
Ixorhoea Fenzl. Boraginaceae (inc. sed.). 1 Argentina.
Jaborandi, *Pilocarpus pennatifolius* Lem.
Jaborosa Juss. Solanaceae (2). 10 Mexico, temp. S. Am.
Jaboticabá, *Myrciaria cauliflora* Berg., &c.
Jacaranda Juss. Bignoniaceae (II). 30 trop. S. Am.
Jacaratia A. DC. (*Jaracatia* Marcgr.). Caricaceae. 6 trop. Am., Afr.
Jacea (Tourn.) L. = *Centaurea* L. p.p. (Comp.).
Jack, jak, *Artocarpus integrifolia* L.
Jackia Wall. Rubiaceae (I. 2). 1 Malaya.
Jacksonia R. Br. Leguminosae (III. 2). 40 Austr.
Jacobaea (Tourn.) L. = *Senecio* Tourn. (Comp.).
Jacobean lily, *Sprekelia formosissima* Herb.
Jacobinia Meric. Acanthaceae (IV. B). 25 trop. Am. Cult. orn. fl.
Jacob's ladder, *Polemonium*.
Jacquemontia Choisy. Convolvulaceae (1). 40 trop. Am., Afr., Sandw. Is.
Jaecquinia L. Theophrastaceae. 35 trop. Am.
Jaeculator, *Acanthaceae*.
Jadunia Lindau. Acanthaceae (IV. B). 1 New Guinea.
Jaegeria H. B. et K. Compositae (5). 6 Mexico to Argentina.
Jaeschkea Kurz. Gentianaceae (1). 3 Himal.
Jagera Blume. Sapindaceae (1). 3 Malaya, Austr.
Jaggery, palm sugar, *Arenga*, *Borassus*, *Cocos*, &c.
Jalambica Rafin. (*Neurelmis* Rafin.). Comp. (inc. sed.). 1 Cuba?
Jalap, *Exogonium Purga* Benth.; false -, *Mirabilis Jalapa* L.
Jalapa Tourn. ex Adans. = *Mirabilis* L. (Nyctag.).
Jaliscoa S. Wats. Compositae (2). 1 Mexico.
Jamaica bark (W.I.), *Exostemma*; - ebony, *Brya Ebenus* DC.; - quassia, *Picraena*; - sorrel, *Hibiscus Sabdariffa* L.
Jambolana, **Jambu**, *Eugenia Jambolana* Lam.
Jambosa DC. (*Eugenia* p.p. *BH*). Myrtaceae (1). 125 Indomal., Madag.

Jamesia Torr. et Gray. Saxifragaceae (III). 1 Rocky Mts.

Jamesonia Hook. et Grev. Polypodiaceae. 15 trop. Am.

Jamestown weed (Am.), *Datura Stramonium* L.

Janatsi, *Debregeasia edulis* Wedd.

Janipha H. B. et K. = Manihot Adans. (Euphorb.).

Jansenia Barb. Rodr. Orchidaceae (II. 19). 1 Brazil.

Jansonia Kippist. Leguminosae (III. 2). 1 W. Austr.

Janusia A. Juss. Malpighiaceae (I). 10 warm Am.

Japan, Japanese, Aralia, Fatsia; - **cedar**, *Cryptomeria japonica* D. Don; - **climbing fern**, *Lygodium*; - **cloves**, *Lespedeza*; - **lacquer**, *Rhus vernicifera* DC.; - **laurel**, *Aucuba japonica* Thunb.; - **lilac**, *Syringa amurensis* Rupr.; - **pepper**, *Zanthoxylum piperitum* DC.; - **snow-flower**, *Deutzia*; - **wax**, *Rhus succedanea* L.

Japarandiba Adans. (*Gustavia* L.). Lecythidaceae. 20 trop. Am. W.I.

Jaracatia Marcgr. ex Endl. Caricaceae. 6 trop. Am. and Afr.

Jarosse, *Lathyrus sativus* L.

Jarrah, *Eucalyptus marginata* Sm.

Jarul, *Lagerstroemia Flos-reginae* Retz. (India, Ceylon).

Jasione L. Campanulaceae (I). 5 Medit., Eur. *J. montana* L. (sheep's-bit scabious), in Brit. The fl. affords—like *Phyteuma*, but in a slightly different way—an intermediate step between *Campanula* and the Compositae, in the floral mechanism. The tube is formed by the anthers, which cohere at their base, while the petals spread out as soon as the bud opens.

Jasminaceae (Warming) = Oleaceae p.p.

Jasmine, *Jasminum*; **bastard** - (W.I.), *Cestrum*; - **box**, *Phillyrea*; **Cape** -, *Gardenia*; **Carolina** -, *Gelsemium*; **French** - (W.I.), *Calotropis*; - **tree** (W.I.), *Plumieria*.

Jasminum (Tourn.) L. Oleaceae. 170 trop. and subtrop. Erect or twining shrubs, often cult. perf. fls. (jasmine). The fr. is vertically constricted into two lobes.

Jasonia Cass. Compositae (4). 2 Medit.

Jateorhiza Miers. Menispermaceae. 2 trop. Afr. *J. Columba* Miers (*J. palmata* Miers) furnishes *Radix Columba*, used as a tonic.

Jatropha L. Euphorbiaceae (A. II. 3). 160 trop. and subtrop. *J. podagrica* Hook. is a xero. with egg-shaped swollen stem, consisting mainly of water-storing tissue; the l. fall in the dry season. The axis of the infl. is red, as well as the fls. The first branches of the dichasium end in ♀, the later in ♂ fls. (cf. *Begonia*).

Jatrorrhiza Prantl = *Jateorhiza* Miers (Menisp.).

Jaumea Pers. Compositae (6). 8 Am.

Jaundea Gilg. Connaraceae. 1 Cameroons.

Java almond, *Canarium commune* L.

Jeffersonia Bart. Berberidaceae. 2 N. Am., E. As.

Jehlia Rose (*Lopezia* p.p.). Onagraceae (2). 3 Mexico, C. Am.

Jenkinsonia Sweet = *Pelargonium* L'Hérit. p.p. (Geran.).

Jenmania Rolfe (*Rolfea* Zahlbr.). Orchid. (II. 7). 1 Guiana, W.I.

Jepsonia Small (*Saxifraga* p.p.). Saxifragaceae (I). 3 S. Calif.

Jerdonia Wight. Gesneriaceae (I). 1 S. India.

Jericho, rose of, *Anastatica hierochuntina* L.

- Jerusalem artichoke**, *Helianthus tuberosus* L.
Jessamine, Jasmine.
Jessenia Karst. Palmaceae (IV. 1). 3 Trinidad to Amazonas.
Jewel-weed (Am.), *Phlomis*.
Jew's mallow (W.I.), *Corchorus olitorius* L.
Jimson weed, Jamestown weed (Am.), *Datura Stramonium* L.
Jippi-jappa (Jamaica), *Carludovica*.
Joannegria Chiov. (*Negria*). Gramineae (II). 1 E. Afr.
Joannesia Vell. Euphorbiaceae (A. II. 3). 1 coast of Brazil; seed ed.; purgative; oil; good timber.
Jobinia Fourn. Asclepiadaceae (II. 3). 2 Brazil.
Job's tears, *Coix Lachryma* L.
Joe-pye-weed (Am.), *Eupatorium purpureum* L.
John Crow's nose (W.I.), *Phyllocoryne*.
John-go-to-bed-at-noon, *Tragopogon pratensis* L.
Johnsonia R. Br. Liliaceae (III). 3 S.W. Austr.
Johrenia DC. Umbelliferae (III. 6). 17 W. As.
Joint-grass (Am.), *Panicum distichum* L.
Joinvillea Gaudich. Flagellariaceae. 4 Malay Archipel., N. Cal.
Jolly, brown (W.I.), *Solanum Melongena* L.
Jollydora Pierre (*Connarus* p.p.). Connaraceae. 4 W. trop. Afr.
Jonesia Roxb. = *Saraca* L. (Legum.).
Jonesiella Rydberg (*Astragalus* p.p.). Legumin. (III. 6). 1 N. Am.
Jonquil, *Narcissus Jonquilla* L.
Jonquilla Haw. = *Narcissus Tourn.* p.p. (Amaryll.).
Joosia Karst. (*Ladenbergia* BH.). Rubiaceae (I. 5). 2 N. Andes.
Jordanian species, cf. Nomenclature.
Jorena Adans. Inc. sed. Nomen.
Josephia Wight. Orchidaceae (II. 3). 2 India, Ceylon.
Josephinia Vent. Pedaliaceae. 3 Indomal.
Jossinia Comm. = *Eugenia* L. p.p. (Myrt.).
Jouvea Fourn. Gramineae (12). 1 Mexico.
Jovellana Ruiz et Pav. (*Calceolaria* p.p.). Scrophulariaceae (II. 2). 6 Chili, N.Z.
Jowar (India), Guinea corn, *Sorghum vulgare* Pers.
Joyweed, *Telanthera*.
Juania Drude. Palmaceae (IV. 1). 1 Juan Fernandez.
Juanulloa Ruiz et Pav. Solanaceae (4). 10 trop. Am.
Jubaea H. B. et K. Palmae (IV. 2). 1 Chili, *J. spectabilis* H. B. et K., the Coquito-palm. Palm-honey is prepared by evaporation of the sap, and the tree is useful in other ways.
Jubelina A. Juss. Malpighiaceae (I). 3 Guiana, Nicaragua.
Jububa Bub. (*Zizyphus* p.p.). Rhamnaceae. 1 Medit.
Judas' bag, *Adansonia digitata* L.; - tree, *Cercis Siliquastrum* L.
Juglandaceae (EP., BH.) Dicots. (Archichl. Juglandales; Unisex. BH.). 6 gen., 40 sp., N. temp., trop. As. Trees; alt. stip. l., with brown hairy winter buds; the buds arise rather high up in the leaf axils, and sometimes several appear in descending order. Infl. monoecious, the ♂ appearing as catkins on the twigs of the previous year, the ♀ as sessile fls. on the stems of the current year. P. typically 4-leaved, but often fewer by abortion. ♂ fl. with 3—40 sta. (more in the lower

fls.); ♀ fl. with epig. P.; $\bar{G}$ (2), 1-loc., with 1 erect orthotr. ov.; style short with 2 stigmas. Fl. wind-fertilised; *Juglans* (*q.v.*) is chala-zogamic. Drupe or nut. Testa thin; seed exalbuminous. *Chief genera:* *Pterocarya*, *Juglans*, *Carya*.

Juglandales. The 8th order of Dicotyledons (Archichl.).

Juglandeae (*BH.*) = *Juglandaceae*.

Juglandiflorae (Warming). The 3rd cohort of Choripetalae.

Juglans L. *Juglandaceae*. 8 N. temp. *J. regia* L. is the walnut. The ♂ fl. is 'adnate' to the bract and bracteoles and has 5, 4, 3, or 2 P leaves; the lowest fls. have as many as 20 sta., the upper as few as 6. Drupe, with green fleshy exocarp, and hard endocarp (the shell). The 'boats' into which the shell splits do not represent each a cpl.; the splitting is down the midribs of the cpls. Within is the seed with its thin brown seed-coat. It is exalbuminous with a basal radicle and two large cotyledons, which are rendered irregular in shape by the presence of partial septa in the ovary. The fl. of *J.* has lately been shown to be chalazogamic.

The wood of the walnut is valued in cabinet-making, &c.; the seeds yield an oil. Many var. are cult. for their fr.

Jujube, *Zizyphus vulgaris* Lam.

Juliania Schlecht. *Julianiaceae*. 4 Mexico, Peru. Trees or shrubs with alt. exstip. l. and dioec. fls., ♂ in panicles, ♀ in fours. ♂ P 6—8, A 6—8; ♀ naked, $\bar{G}$ 1-loc. with 1 ovule on cup-like funicle. No endosp.

Julianiaceae (*EP.*) Dicots. (Archichl. Julianiales). *Cf.* *Juliania*, *Orthopterygium* (only gen.).

Julianiales. The tenth order of Dicots. Archichlamydeae.

Julocroton Mart. *Euphorbiaceae* (A. II. 1). 20 trop. Am. Fls. in spikes, the ♀ below, the ♂ above.

Julostylis Thw. *Malvaceae* (4). 1 Ceylon.

Juncaceae (*EP.*, *BH.*). Monocotyledons (*Liliiflorae*; *Calycinae BH.*). 7 gen., 300 sp. in damp and cold places, temp. and frigid zones and trop. Mts. Usu. creeping sympodial rhiz., one joint of the sympodium appearing above ground each year as a leafy shoot. The stem does not often lengthen above ground, except to bear the infl.; l. usu. narrow, occasionally centric (*Juncus*). Infl. usu. a crowded mass of fls. borne in cymes of various types, usu. monochasial. Fl. ♂, regular wind-fertilised. P 3+3, sepaloid, with the odd leaf of the inner whorl post.; A 3+3 (or the inner wanting), anthers dehiscing lat., pollen in tetrads; $\bar{G}$ (3); plac. axile or parietal, with ∞ or few anatr. ov.; style simple, with 3 brush-like stigmas. Loculic. caps. Embryo straight, in starchy endosp. *Chief genera:* *Prionium*, *Juncus*, *Luzula*.

Juncaginaceae = *Scheuchzeriaceae*.

Juncella F. Muell. (*Trithuria BH.*). *Centrolepidaceae*. 2 S. Austr., Tasm.

Juncellus C. B. Clarke (*Cyperus* p.p. *EP.*). *Cyperaceae* (4). 10 | *.

Junceus (Lat.), rush-like.

Juncoides Dill. = *Luzula* DC (*Junc.*).

Juncus (Tourn.) L. *Juncaceae*. 225 cosmop. but chiefly in cold, wet places. 18 sp. of rush are found in Brit. Most have a sympodial

rhiz. giving off one leafy shoot each year. The l. are of various types, with large sheathing bases. Some are flat and grass-like, others needle-like, and still others centric in structure and standing erect. The infl. is a dense head or panicle, of cymose construction (usu. rhipidia or drepania). In some sp. it appears to be lat. on a leaf-like cylindrical stem, but is really only pushed to one side by the bract of the infl. Fl. protog. and wind-fert.

Rushes are largely used for making baskets, chair bottoms, &c.

J. squarrosus L. is common on hill pastures in Brit.; it is eaten by sheep and forms a valuable part of their fodder when grass is scarce.

June-berry (Am.), *Amelanchier*.

Jungia L. f. Compositae (12). 15 S. Am.

Jungle, low or thin forest.

Juniper, *Juniperus*.

Juniperus Tourn. ex L. Coniferae (Pinac. 42; see C. for genus characters). 30 *. The juniper, *J. communis* L. (Asia and Eur. incl. Brit.), and *J. Oxycedrus* L., &c. have needle l. throughout life; others, such as *J. Sabina* L., the savin (Eur. As.), have small l. closely appressed, as in Cupressus. Seedling forms of these are known (see Retinospora). The cone consists of 1—4 whorls of scales, one only being fertile, as a rule. In ripening the whole becomes a fleshy mass enclosing the hard seeds, and forming a good imitation of a true berry. The fruit is eaten by birds. That of *J. communis* is used in making gin. The wood of *J. virginiana* L. is the red cedar used for pencils; others also give useful timber.

Juno Tratt. = *Iris* L. p.p. (Irid.).

Junodia Pax. Euphorbiaceae (A. 1. 1). 1 trop. Afr.

Jurinea Cass. Compositae (11). 50 Medit., Eur., As.

Juruasia Lindau. Acanthaceae (1v. B). 2 Amazonas.

Jussieua L. (*Jussiaea*). Onagraceae (1). 40 trop.; water and marsh plants. Aerating tissue is well developed (*cf.* Sonneratia, Sesbania). In *J. repens* L. (*J. diffusa* Forsk.), when growing in water, two forms of root develop, ordinary anchorage roots and erect spongy roots which grow upwards, often till they reach the surface of the water. The bulk of the tissue consists of aerenchyma. In *J. suffruticosa* L. (*J. salicifolia* H. B. et K.) there is an erect stem, whose lower part is covered with aerenchyma if growing in water (*cf.* Lycopus). If the plants be grown on land none of these phenomena appear. [Figs., &c., in Goebel's *Pflanzenbiol. Schild.* II. 256.]

Justenia Hiern. Rubiaceae (1. 2). 1 trop. Afr.

Justicia Houst. ex L. Acanthaceae (1v. B). 300 trop.

Jute, *Corchorus*; **China** -, *Abutilon Avicennae* Gaertn.

Kadsura Kaempf. ex Juss. Magnoliaceae. 8 trop. As., China, Japan. Fls. unisexual, spiral throughout. Climbing shrubs with no stipules.

Kadua Cham. et Schlecht. Rubiaceae (1. 2). 16 Hawaiian Is.

Kaempferia L. Zingiberaceae (1). 55 trop. As. and Afr. Cult. orn. fl.

Kaernbachia Schlechter. Cunoniaceae. 2 New Guinea.

Kaffir boom, *Erythrina*; - **bread**, *Encephalartos*; - **corn**, *Sorghum vulgare* Pers.; - **lily**, *Clivia*; - **thorn**, *Lycium*.

Kageneckia Ruiz et Pav. Rosaceae (1. 2). 3 Chili.

- Kakosmanthus** Hassk. (*Payena* p.p. *BH.*). Sapotaceae (1). 4 Malay Arch.
- Kalaharia** Baill. Verbenaceae (4). 2 trop. and S. Afr.
- Kalanchoë** Adans. Crassulaceae. 70° trop. Like *Bryophyllum*.
- Kale**, *Brassica oleracea* L. var.; **sea-**, *Crambe maritima* L.
- Kalidium** Moq. in DC. Chenopodiaceae (A). 4 S. Russia, W. As.
- Kaliphora** Hook. f. Cornaceae. 4 Madag.
- Kallstroemia** Scop. (*Tribulus* p.p.). Zygophyllaceae. 10 Am., Austr.
- Kalmia** L. Ericaceae (1. 3). 6 N. Am., Cuba. The anthers are held in pockets of the C, and the filaments are bent like bows when the fl. is open. An insect probing for honey releases them, and the anthers strike against him, loading him with pollen.
- Kalmiella** Small (*Kalmia* p.p.). Ericaceae (1. 3). 1 N. Am.
- Kalopanax** Miq. (*Acanthopanax* *BH.*). Araliaceae (1). 2 E. As.
- Kalosanthus** Haw. = *Rochea* DC. (Crass.).
- Kalymopetalon** Pohl. Inc. sed. Nomen.
- Kampmannia** Steud. Gramineae (inc. sed.). 1 N. Zealand.
- Kanahia** R. Br. Asclepiadaceae (II. 1). 3 E. Afr., Arabia.
- Kandelia** Wight et Arn. Rhizophoraceae. 1 trop. As.
- Kangaroo apple**, *Solanum aviculare* Forst.; **-grass**, *Anthistiria*; **-thorn**, *Acacia armata* R.Br.
- Kania** Schlechter. Saxifragaceae (III). 1 New Guinea.
- Kaniata**, *Mallotus*.
- Kanimia** Gardn. Compositae (2). 7 trop. S. Am.
- Kapa cloth**, *Broussonetia papyrifera* Vent.
- Kapok** *Eriodendron anfractuosum* DC., *Bombax*.
- Karatas** (Plum.) Mill. Bromeliaceae (4). 3 W. Ind.
- Karité**, *Butyrospermum Parkii* Kotschy.
- Karlea** Pierre (*Maesopsis* *EP.*). Rhamnaceae (formerly in Styraceae and Sapotaceae). 1 trop. Afr.
- Karpaton** Rafin. Inc. sed. 1 N. Am.
- Karri**, *Eucalyptus diversicolor* F. Muell.
- Karwinskia** Zucc. Rhamnaceae. 3 warmer N. Am.
- Katabolism**, the breaking down of materials in the pl.
- Katafa** Costantin et Poiss. (*Cedrelopsis* Baill.). Meliaceae (1). (Authors place as new tribe of Celastraceae.) 1 Madag.
- Kaufmannia** Regel. Primulaceae. 1 Turkestan.
- Kaulfussia** Blume (*Christensenia* Maxon). Marattiaceae. 2 S.E. As.
The palmate l. has large pores below, due to tearing apart of guard cells of stomata. [Campbell in *Ann. Bzg.* 2. VII. 69.]
- Kauri**, **-copal**, *Agathis australis* Steud.
- Kayea** Wall. Guttiferae (IV). 12 Indomal.
- Kedrostis** Medic. Cucurbitaceae (2). 15 trop. Afr. and As.
- Keel**, cf. *Leguminosae*.
- Keenania** Hook. f. Rubiaceae (1. 7). 2 Indomal.
- Keerlia** A. Gray et Engelm. Compositae (3). 3 Texas, Mexico.
- Kefersteinia** Reichb. f. (*Zygopetalum* *BH.*). Orchid. (II. 14). 6 trop. S. Am.
- Kegelia** Reichb. f. Orchidaceae (II. 13). 1 Guiana.
- Kei-apple**, *Aberia* (*Doryalis*) *caffra* Harv. et Sond.
- Keiria** Bowdich. Oleaceae. 1 Madeira.

- Keiskea** Miq. Labiatae (VI). 1 Japan.
Keithia Benth. (*Hedeoma* p.p. *EP.*). Labiatae (VI). 9 trop. Am.
Keithia Spreng. Capparidaceae (inc. sed.). 1 Brazil.
Keitia Regel. Iridaceae (II). 1 Natal.
Kelleronia Schinz. Zygophyllaceae. 2 E. trop. Afr.
Kelloggia Torr. ex Benth. et Hook. f. Rubiaceae (II. 7). W. N. Am.
Kelseya Rydberg (*Eriogynia* p.p.). Rosaceae (I. 1). 1 Montana.
Kendal green, *Genista tinctoria* L.
Kendrickia Hook. f. Melastomaceae (I). 1 Ceylon, S. India.
Kenguel seed, *Silybum Marianum* Gaertn.
Kennedya Vent. (incl. *Hardenbergia* Benth.). Leguminosae (III. 10).
 15 Austr. The fls. of some are almost black. Cult. orn. fl.
Kenopleurum Candargy. Umbelliferae (III. 6). 1 Lesbos.
Kentia Blume. Palmae (IV. 1). 10 Moluccas to N.Z. (not in Austr.).
 Fls. in groups of 3 (2 male) on the spadix.
Kentiopsis Brongn. Palmaceae (IV. 1). 2 New Caledonia.
Kentranthus Neck. = *Centranthus* DC. (Valerian.).
Kentrochrosia Lauterb. et K. Schum. Apocynaceae (I. 3). 1 New Guinea.
Kentrophyllum Neck. = *Carthamus* L. (Comp.).
Kentrosphaera Volkens. Amarantaceae (2). 1 Kilimandjaro.
Keracia Caest. (*Hohenackeria* p.p.). Umbelliferae (III. 5). 1 W. Medit.
Keramanthus Hook. f. (*Adenia* p.p. *EP.*). Passifloraceae. 1 trop. Afr.
Keraselma Neck. = *Euphorbia* L. (Euph.).
Keratto, *Agave*.
Keraudrenia J. Gay. Sterculiaceae. 8 Austr., Madag.
Kerbera E. Fourn. (*Melinia* *EP.*). Asclepiadaceae (II. 1). 2 Braz., Urug.
Kerguelen cabbage, *Pringlea antiscorbutica* R. Br.
Kerinozoma Steud. Gramineae (12). 1 Java.
Kermadecia Brongn. et Gris. Proteaceae (II). 5 New Cal., E. Austr.
Kernera Medic. (*Cochlearia* L. p.p.). Cruciferae (2). 5 Alps.
Kerneria Moench. = *Bidens* Tourn. p.p. (Comp.).
Kerria DC. Rosaceae (III). 1 E. As., *K. japonica* DC., often cult. orn. shrub.
Kerstingia K. Schum. Rubiaceae (II. 1). 1 Togoland.
Kerstingiella Harms. Leguminosae (III. 10). 1 Togoland. Geocarpic.
Keteleeria Carr. Coniferae (Pinac.; see C. for gen. char.). 4 China.
Keyserlingia Bunge ex Boiss. (*Sophora* p.p. *EP.*). Legum. (III. 1).
 2 W. As.
Keysseria Lauterb. Compositae (3). 1 New Guinea.
Khas-khas, *Vetiveria zizanioides* Stapf.
Khat, *Catha edulis* Forsk.
Khaya A. Juss. Meliaceae (II). 4 trop. Afr.
Kibara Endl. Monimiaceae. 15 Indomal.
Kibessia DC. Melastomaceae (II). 16 Malaya.
Kickxia Blume. Apocynaceae (II. 1). 2 Java.
Kidney-bean, *Phaseolus vulgaris* L.; -fern, *Trichomanes*; -vetch, *Anthyllis vulneraria* L.
Kielmeyera Mart. Guttiferae (I). 18 S. Brazil, char. of campos.
Kigelia DC. Bignoniaceae (4). 3 trop. Afr., Madag. The infls. are borne on old wood, hanging down on very long stalks.

- Kigelianthe** Baill. Bignoniaceae (2). 2 Madag.
- Kiggelaria** L. Flacourtiaceae (3). 5 S. and trop. Afr. *K. Dregeana* Turcz. yields a good timber (Natal mahogany).
- Kinepetalum** Schlechter. Asclepiadaceae (II. 3). 1 Afr.
- Kinetostigma** Dammer. Palmaceae (IV. 1). 1 C. Am.
- King-cup**, *Caltha palustris* L.
- Kingdonia** Balf. f. et W. W. Smith. Ranunculaceae (3). 1 China.
- Kingia** R. Br. Liliaceae (III) (Junc. *BH.*). 1 W. Austr., a char. pl.
- Kingiodendron** Harms. (*Hardwickia* p.p.). Leguminosae (II. 2). 1 Indomal.
- Kingstonia** Hook. f. et Thoms. Anonaceae (1). Malay Peninsula.
- Kinia** Rafin. Inc. sed. 1 Borneo.
- Kinnikinnik** (Am.), *Cornus sericea* L.
- Kino**, a resin-like substance, soluble in water, astringent, used medicinally and in tanning, *Butea*, *Eucalyptus*, *Pterocarpus*, &c.
- Kirengeshoma** Yatabe. Saxifragaceae (III). 1 Japan.
- Kirganelia** Juss. = *Phyllanthus* L. p.p. (Euph.).
- Kirilowia** Bunge. Chenopodiaceae (A). 1 Turkestan, Afghanistan.
- Kirkia** Oliv. Simarubaceae. 4 trop. and S. Afr.
- Kissenia** R. Br. ex T. Anders. Loasaceae. 1 Arabia, S. Afr.
- Kissodendron** Seem. (*Hederap.p. BH.*). Araliaceae (1). 1 Austr., N.G.
- Kitaibelia** Willd. Malvaceae (1). 1 lower Danube. Cult. orn. fl.
- Kitchingia** Baker. Crassulaceae. 10 Madag.
- Kitul** (Ceylon), *Caryota urens* L.
- Klaineanthus** Pierre ex Prain. Euphorbiaceae (A. II. 1). 1 Gaboon.
- Klainedoxa** Pierre. Simarubaceae. 6 trop. Afr.
- Klaprothia** H. B. et K. Loasaceae. 1 N. trop. S. Am.
- Klattia** Baker. Iridaceae (II). 2 Cape Colony.
- Kleinhovia** L. Sterculiaceae. 1 trop. As.
- Kleinia** Jacq. = *Porophyllum* Vaill. (Comp.).
- Kleinia** L. = *Senecio* Tourn. (Comp.).
- Kloppstockia** Karst. = *Ceroxylon* Humb. p.p. (Palm.).
- Klossia** Ridley. Rubiaceae (1. 2). 1 Malay Peninsula.
- Klotzschia** Cham. et Schlechtd. Umbelliferae (1. 2). 2 S. Brazil.
- Klugia** Schlechtd. Gesneriaceae (1). 4 trop. As. Markedly anisophyllous, with heterodromous fls. (*cf.* *Cassia*, *Saintpaulia*).
- Knappia** Sm. = *Mibora* Adans. (Gram.).
- Knapweed**, *Centaurea Cyanus* L.
- Knautia** L. (*Scabiosa* p.p. *BH.*). Dipsaceae. 25 Medit., Eur.
- Knawel**, *Scleranthus annuus* L.
- Knees**, *cf.* *Taxodium*.
- Kneiffia** Spach (*Oenothera* p.p. *BH.*). Onagraceae (2). 10 temp. N. Am. Cult. orn. fl.
- Knema** Lour. (*Myristica* p.p. *BH.*). Myristicaceae. 40 Indomal.
- Knesebeckia** Klotzsch = *Begonia* L. p.p. (Begon.).
- Knife-grass** (W.I.), *Scleria latifolia* Sw.
- Knightia** R. Br. Proteaceae (II). 3 New Zealand, New Caled. *K. excelsa* R. Br. (rewa; N.Z.) furnishes a beautiful timber.
- Kniphofia** Moench. Liliaceae (III). 25 S. Afr., cult. orn. fl. Bees sometimes force their way into fls. and are unable to return.
- Knol-kohl**, *Brassica oleracea* L., var.

- Knotgrass**, *Polygonum*, (Am.) *Paspalum distichum* L.; -weed (Am.) *Polygonum*.
- Knowltonia** Salisb. (*Anemone* p.p. *EP.*). Ranunculaceae (3). 6 S. Afr.
- Knoxia** L. Rubiaceae (II. 1). 9 Indomal.
- Koanophyllon** Arruda. Compositae (inc. sed.). 1 Peru.
- Kobresia** Willd. Cyperaceae (III). 15 N. temp. |* (1 Brit.).
- Kochia** Roth. Chenopodiaceae (A). 35 N. temp., Austr., S. Afr.
- Kochiophyton** Schlechter ex Cogn. (*Acacallis* Lindl.). Orchidaceae (II. 13). 1 Amazonas.
- Koerberlinia** Zucc. Capparidaceae (II) (Simarub. *BH.*). 1 Texas, Mexico. A leafless xerophyte with thorny twigs. *Cf.* next article.
- Koerberliniaceae**. Dicot. (Archichl. Parietales). A fam. made for the genus *Koerberlinia* (*q.v.*), now placed in Capparidaceae. See *Nat. Pfl.*
- Koehleia** Endl. (*Cirsium* p.p. *EP.*). Compositae (II). 1 Mt. Taurus.
- Koehneola** Urb. (*Tetranthus* p.p.). Compositae (5). 1 Cuba.
- Koeleria** Pers. Gramineae (10). 25 temp. (1 Brit.).
- Koellensteinia** Reichb. f. (*Aganisia* p.p. *BH.*). Orchid. (II. 14). 1 Colombia.
- Koellia** Moench. (*Pycnanthemum* Michx.). Labiatae (VI). 15 S. U.S.
- Koellikeria** Regel. Gesneriaceae (II). 1 Colombia.
- Koelpinia** Pall. Compositae (13). 3 N. Afr. to E. As.
- Koelreuteria** Laxm. Sapindaceae (II). 3 China. The capsule is large and bladdery and may be blown about by wind (*cf.* *Colutea*).
- Koenigia** L. (*Polygonum* p.p. *BH.*). Polygon. (I. 1). 1 Arctic, Himal.
- Koernickeia** Klotzsch (*Paullinia* p.p. *EP.*). Sapindaceae (I). 1 Guiana.
- Kohautia** Cham. et Schlechtd. = *Oldenlandia* L. p.p. (Rubi.).
- Kohleria** Regel (*Isoloma* *BH.*). Gesner. (II). 40 trop. Am. Cult. orn. fl.
- Kohlerianthus** Fritsch (*Fluckigeria* p.p.). Gesneriaceae (1). 1 Bolivia.
- Kohl-rabi**, *Brassica oleracea* L., var.
- Kokia** Lewton (*Gossypium* p.p.). Malvaceae (4). 1 Hawaiian Is.
- Kokoona** Thw. Celastraceae. 3 Indomal.
- Kola nut**, *Cola acuminata* Schott. et Endl., *C. vera* K. Schum.
- Kolkwitzia** Graebn. Caprifoliaceae. 1 China.
- Kolobochilus** Lindau. Acanthaceae (IV. B). 2 Costa Rica.
- Kolobopetalum** Engl. Menispermaceae. 4 trop. Afr.
- Kolowratia** Presl (*Alpinia* p.p. *BH.*). Zingiberaceae (1). 1 Phil. Is.
- Komaroffia** O. Ktze. (*Nigella* p.p.). Ranunculaceae (2). 1 Turkestan.
- Kompitsia** Costantin et Galland. Asclepiadaceae (1). 1 Madag.
- Koniga** R. Br. = *Alyssum* Tourn. (*BH.*) = *Lobularia* Desv.
- Koompassia** Maingay (*Abauria* Becc.). Leguminosae (II. 5). 2 Malaya.
- Koordersina** O. Ktze. = *Koordersiodendron* Engl. (Anacard.).
- Koordersiodendron** Engl. Anacardiaceae (2). 1 Celebes.
- Kopsia** Blume. Apocynaceae (I. 3). 10 Indomal.
- Korshinskia** Lipsky. Umbelliferae (III. 5). 1 C. As.
- Korthalsella** Van Tiegh. (*Bifaria* p.p.). Loranthaceae (II). 20 Polynesia to Madag.
- Korthalsia** Blume. Palmae (III). 20 Indomal. Some, *e.g.* *K. horrida* Becc., are said to be myrmecophilous (*cf.* *Cecropia*), the ants living in the sheaths of the leaves.
- Koslovkia** Lipsky (*Albertia* p.p.). Umbelliferae (III. 4). 1 Turkestan.

- Kosmosiphon** Lindau. Acanthaceae (IV. A). 1 trop. Afr.
Koso, *Brayera*, *Hagenia*.
Kosteletzkyia C. Presl. Malvaceae (4). 8 ✱.
Kostyczewa Korshinsky. Leguminosae (III. 6). 1 Turkestan.
Kotchubaea Fisch. Rubiaceae (I. 8). 1 N. Brazil, Guiana.
Kraenzlinella O. Ktze. (*Otopetalum* Lehm. et Kränzl.). Orchidaceae (II. 16). 1 Ecuador.
Kralikia Coss. et Dur. Gramineae (12). 1 Algeria.
Krameria Loefl. Leguminosae (II. 6). 13 Mexico to Chili. Placed in Polygalaceae by *BH.*, but has a pet., not a sep., post. K and C 4—5; A 4, anthers opening by pores. Eichler, *Blüthendiag.* p. 522.
Krascheninikowia Coss. et Dur. = *Stellaria* L. p.p. (Caryophyll.).
Kraunhia Rafin. (*Wistaria* Nutt.). Leguminosae (III. 6). 4 E. As., E. N. Am.
Kraussia Harv. (*Tricalysia* p.p. *EP.*). Rubiaceae (I. 8). 3 trop. and S. Afr.
Kreysigia Reichb. Liliaceae (1). 1 S.E. Austr.
Krigia Schreb. Compositae (13). 6 N. Am.
Krokeria Moench. = *Lotus* L. p.p. (Legum.).
Krugella Pierre (*Pouteria* p.p. *EP.*). Sapotaceae (1). 1 Trinidad.
Krugia Urb. (*Marlierea* p.p.). Myrtaceae (1). 1 W.I.
Krugiodendron Urb. (*Ceanothus* p.p.). Rhamnaceae. 1 W.I.
Krynitzkia Fisch. et Mey. (*Cryptanthus* *EP.*). Boragin. (IV. 2). 45 W. Am.
Kugia Berl. Inc. sed. Nomen.
Kuhlhasseltia J. J. Smith. Orchidaceae (II. 2). 2 Malay Archip.
Kuhlia H. B. et K. (*Banara* *EP.*). Flacourtiaceae (5). 6 Am.
Kuhnia L. Compositae (2). 3 Arizona to Mexico.
Kuhnistera Lam. (*Petalostemon* Michx.). Leguminosae (III. 6). 20 N. Am.
Kumlienia Greene (*Oxygraphis* *EP.*). Ranunculaceae (3). 1 N.W. Am.
Kummeria Mart. (*Discophora* Miers). Icacinaceae. 2 Brazil, Guiana.
Kummerowia Schindler (*Lеспедеза* p.p., *q.v.*). Legumin. (III. 7). 1 Japan.
Kumquat, *Citrus japonica* Thunb.
Kundmannia Scop. Umbelliferae (III. 5). 1 Medit., S. Eur.
Kunstleria Prain. Leguminosae (III. 8). 5 Malay Peninsula.
Kunthia Humb. et Bonpl. (*Chamaedorea* p.p. *BH.*). Palm. (IV. 1). 1 N.W. S. Am.
Kunzea Reichb. Myrtaceae (II. 1). 18 Austr.
Kunzmannia Klotzsch et Schomb. Rutaceae (inc. sed.). 1 Guiana.
Kurakkan (Ceylon), *Eleusine Coracana* Gaertn.
Kurdee seed, *Carthamus tinctorius* L.
Kurrimia Wall. Celastraceae. 8 Indomal.
Kurzamra O. Ktze. (*Soliera* Clos). Labiatae (VI). 1 Chili.
Kuschakewiczia Regel et Smirn. Boraginaceae (IV. 1). 1 Turkestan.
Kutchubaea Fisch. ex DC. Rubiaceae (I. 8). 1 N. Brazil, Guiana.
Kutira gum, *Cochlospermum*, *Sterculia*.
Kydia Roxb. Malvaceae (2). 2 India.
Kyllinga Rottb. Cyperaceae (1). 50 trop. and subtrop. Some have aromatic roots.

Kyrstenia Neck. (*Eupatorium* Tourn. p.p.). Compositae (2). 50 N. Am.

Labatia Sw. Sapotaceae (1). 6 trop. S. Am., W.I.

Labdanum, *Cistus creticus* L., *C. ladaniferus* L.

Labellum, *Canna*, Marantaceae, Orchidaceae, Stylidiaceae, Zingiberaceae.

Labiatae (EP., BH.). Dicotyledons (Sympet. Tubiflorae; Lamiales BH.). 200 gen. 3000 sp., cosmop.; chief centre the Medit. region. Some small groups are localised in their distribution, e.g. § II. in Austr. and Tasmania, III. in India, Malaya, China, &c., VIII. in Centr. Am., whereas the large ones, such as I. and IV., are cosmop. Most L. are land-plants, and herbs or undershrubs, similar in habit and structure. Stem usu. square, with decussate simple exstip. l., often hairy and with epidermal glands secreting volatile oils, which give char. scents to many. A few marsh-plants (*Mentha*, *Lycopus*, &c.), a few climbers (*Stenogyne* sp., *Scutellaria*, &c.), and a few small trees (*Hyptis* sp.). Many xero. with reduced, sometimes infolded, l., hairiness, thick cuticles, &c., e.g. *Rosmarinus*.

The axis of the first order is not closed by a fl. but only those of later orders; thus the primary form of the infl. is racemose, and a simple raceme actually occurs in *Scutellaria*, &c. Usu. however a dichasial cyme, becoming cincinnal in its later branchings, occurs in the axil of each l. upon the upper part of the main axis. In *Teucrium*, *Nepeta* sp., &c., the construction of this cyme is easily seen; but in most L. it is closely 'condensed' into the axil, so that all the fls. are sessile; but it is easily seen that the central fl. opens first and then those on either side of it (see diagram). The two condensed cymes at each node overlap the leaf-axils and often form what looks like a whorl of fls.; this infl. is often called a *verticillaster* or false whorl.



Floral diagram of *Lamium album* with indication of dich. double cincinnus at the sides. (After Eichler.) The asterisk represents the missing posterior sta.

Fl. ♂ or gynodioec., ♂, hypog., 5-merous with suppression in some whorls. Usu. formula $K(5), C(5), A_4, \underline{G}(2)$. K tubular, bell- or funnel-shaped, sometimes 2-lipped, persistent in fr.; C usu. 2-lipped with no clear indication of the individual petals; A_4 , didynamous, or of nearly equal length, sometimes 2, epipet. with intr. anthers. G on a nectariferous disc (often developed on anterior side only), of (2) cpls. placed antero-post. Early in development a constriction appears in the ovary in the antero-post. line, dividing each cpl. into 2 loculi, so that the ovary becomes 4-loc. as it matures. Each of the 4 portions is nearly independent of the rest, and the style springs between them from the base of the ovary (i.e. is *gynobasic*); stigma 2-lobed. Placentae axile, each with 1 basal erect anatropous ovule with ventral raphe. Fr. usu. a group of 4 achenes or *nutlets*, each containing one seed; sometimes a drupe. Seed with no endosp. or very little; the radicle of the embryo points downwards (cf. Boraginaceae).

The fls. belong in general to classes H. and F. The 2-lipped C ensures that the visiting insect shall take a definite position in regard to the anthers and stigma whilst probing for the honey at the base of the fl. The lower lip acts as a flag to attract, and also as a landing-place, whilst the upper lip shelters the essential organs, which are usu. placed so as to touch the insect's back. The length of the C-tube varies very much, and with it the kind of visitors. Most Brit. sp. are bee fls., the long-tubed red fls. of *Monarda* &c. are butterfly fls., and a few sp. of *Salvia* &c. are humming-bird fls. The pollination-mech. is usu. simple; in *Lamium*, &c. the fl. is homogamous, the stigma merely projecting beyond the anthers so as to be touched first, but usu. the fl. is dichogamous (protandr.), often with movements of the essential organs, *e.g.* in *Teucrium*, &c. The lever-mechanism of *Salvia* is almost unique. *Thymus*, *Origanum*, and their allies, have nearly regular fls. visited by a more miscellaneous selection of insects. In many L., esp. § VI., interesting distrs. of sex appear, esp. gynodioecism.

A few disperse their fr. by aid of the persistent bladdery K, or by hooks formed from the K teeth. The stalks are often hygroscopic and move in such a way as to favour dispersal in wet weather.

Useful on account of their volatile oils; many, *e.g.* *Thymus*, *Ocimum*, *Origanum*, *Salvia*, &c., used as condiments. Oils and perfumes are obtained by distillation from *Rosmarinus*, *Pogostemon*, *Lavandula*, &c. Food products from *Stachys* sp.

Classification and chief genera (after Briquet, from whose account much of the above is condensed); closely allied to Verbenaceae; from Boraginaceae the position of the radicle sharply separates them, whilst the similarity to Scrophulariaceae, &c. is largely in minor chars.

A. Style not gynobasic. Nutlets with lateral-ventral attachment and usu. large surface of contact (often $> \frac{1}{2}$ as high as ovary).

I. *AJUGOIDEAE* (seed exalb.);

1. *Ajugeae* (corolla various; upper lip if present rarely concave; sta. 4 or 2; anther 2-loc.; nutlets $\pm$ wrinkled): *Ajuga*, *Teucrium*.

2. *Rosmarineae* (corolla strongly 2-lipped; upper lip very concave and arched; sta. 2; anthers 1-loc.; nutlets smooth): *Rosmarinus* (only genus).

II. *PROSTANTHEROIDEAE* (seed albuminous): *Prostanthera*.

B. Style perfectly gynobasic. Nutlets with basal attachment and usu. small surface of contact, rarely with $\pm$ basal-dorsal attachment.

III. *PRASIOIDEAE* (nutlet drupaceous with fleshy or very thick exocarp and hard endocarp): *Stenogyne*, *Gomphostemma*.

IV. *SCUTELLARIOIDEAE* (nutlet dry; seed $\pm$ transversal; embryo with curved radicle lying on one cot.): *Scutellaria*.

V. *LAVANDULOIDEAE* (nutlet dry; seed erect; embryo with short straight superior radicle; disc-lobes opp. to ovary-lobes; nutlets with $\pm$ distinct dorsal-basal attachment; sta. 4 included; anthers 1-loc. at tip through union of thecae): *Lavandula* (only genus).

VI. *STACHYDOIDEAE* (ditto, but disc-lobes, when distinct, alt. with ovary-lobes; nut with small basal attachment; sta. ascending or spreading and projecting straight forwards): Marrubium, Nepeta, Dracocephalum, Prunella, Phlomis, Galeopsis, Lamium, Ballota, Stachys, Salvia, Monarda, Ziziphora, Horminum, Calamintha, Satureia, Origanum, Thymus, Mentha, Pogostemon.

VII. *OCIMOIDEAE* (as VI., but sta. descending, lying upon under lip or enclosed by it): Hyptis, Ocimum.

VIII. *CATOPHERIOIDEAE* (nutlet dry; seed erect; embryo with curved radicle lying against the cotyledons): Catopheria.

Labiata (C), with projecting lip.

Labichea Gaudich. ex DC. Leguminosae (II. 5). 5 Austr.

Labidostelma Schlechter. Asclepiadaceae (II. 4). 1 Guatemala.

Labile, plastic.

Labisia Lindl. Myrsinaceae (II). 5 Malay Archip.

Lablab Adans. (*Dolichos* BH.). Leguminosae (III. 10). 1 trop. Afr., *L. vulgaris* Sair, largely cult. in trop. for ed. pods.

Labordia Gaudich. Loganiaceae. 9 Hawaiian Is.

Labourdonnaisia Boj. Sapotaceae (I). 3 Mauritius, Natal.

Labrador tea (Am.), *Ledum palustre* L.

Labramia A. DC. (*Mimusops* p.p. EP.). Sapotaceae (2). 1 Madag.

Laburnum L. Leguminosae (III. 3). 3 Eur., W. As. *L. vulgaris* J. Presl, the common laburnum. The fl. has a simple Trifolium-mech. There is no free honey; bees pierce the swelling at the base of the vexillum (cf. Orchis). All parts are poisonous.

Lac, a resin formed as an excretion from the skin of the lac insect, living on *Butea*, *Croton*, *Ficus*, *Schleichera*, &c.

Lacaena Lindl. Orchidaceae (II. 13). 2 Mexico, C. Am. Cult. orn. fl.

Lacaitaea Brand (*Trichodesma* p.p.). Boragin. (IV. 1). 1 Sikkim.

Laccodiscus Radlk. (*Cupania* p.p. BH.). Sapindaceae (I). 1 trop. W. Afr.

Laccopetalum Ulbrich (*Anemone* p.p.). Ranunculaceae (3). 1 Peru.

Laccosperma G. Mann et H. Wendl. (*Ancistrophyllum* p.p.). Palmaeae (III). 1 W. Afr.

Lace-bark (W.I.), *Lagetta Lintearia* Lam.

Lacerate, deeply and irregularly divided.

Lachemilla Rydberg (*Alchemilla* p.p.). Rosaceae (III. 5). 15 N. Am.

Lachenalia Jacq. Liliaceae (v). 35 S. Afr. *L. tricolor* Jacq. a little bulbous plant with two leaves, cult. orn. fl.

Lachnaea L. Thymelaeaceae. 18 S. Afr.

Lachnagrostis Trin. = *Deyeuxia* Clar. (BH.) = *Calamagrostis* p.p.

Lachnanthes Ell. Haemodoraceae. 1 N. Am., *L. tinctoria* Ell., the paint-root. The roots yield red dye. *Orig. of Species*, 6th ed., p. 9.

Lachnastoma Korth. (*Coffea* p.p.). Rubiaceae (II. 4). 1 Java.

Lachnocapsa Balf. f. Cruciferae (4). 1 Socotra.

Lachnocaulon Kunth. Eriocaulaceae. 4 S.E. N. Am.

Lachnocephalus Turcz. (*Mallophora* p.p.). Verben. (3). 5 temp. W. Austr.

Lachnochloa Steud. Gramineae (inc. sed.). 1 Senegambia.

Lachnoloma Bunge. Cruciferae (1). 1 Turkestan.

- Lachnophyllum** Bunge. Compositae (3). 2 W. As.
Lachnorhiza (*Vernonia* p.p. *EP.*). Compositae (1). 1 Cuba.
Lachnospermum Willd. Compositae (4). 1 S. Afr.
Lachnostachys Hook. Verbenaceae (3). 8 Austr.
Lachnostoma H. B. et K. Asclepiadaceae (II. 4). 6 warm Am.
Lachnostylis Turcz. Euphorbiaceae (A. I. 1). 1 Cape Colony.
Laciale O. Ktze. (*Schizoptera EP.*). Compositae (5). 1 Ecuador.
Laciniaria Hill = *Liatris* Schreb. (Comp.).
Laciniate, divided into several long segments.
Lacis Schreb. Podostemaceae. 1 Amazon.
Lacistema Sw. Lacistemaceae. 16 trop. Am., W.I. Shrubs with distichous exstip. l., and spikes of very small fls. ♂, naked or with one whorl of P, with concave axis. A 1, G (2—3) with parietal plac. and 1—2 pend. ov. on each. One-seeded caps. Endosp.
Lacistemaceae (*EP.*, *BH.*). Dicots. (Archichl. Piperales; Monochlam. Anom. *BH.*). Only genus *Lacistema*, *q.v.* Closely allied to Piperaceae.
Lacmellia Karst. Apocynaceae (I. 1). 1 trop. S. Am.
Lacquer, Japan, *Rhus vernicifera* DC.
Lactoridaceae (*EP.*; *Piperaceae* p.p. *BH.*). Dicotyledons (Archichl. Ranales). Only gen. *Lactoris*, *q.v.*
Lactoris Phil. Lactoridaceae. 1 sp., *L. fernandeziana* Phil., Juan Fernandez. Shrub with 3-merous fls. P 3, A 3 + 3, G 3.
Lactuca (Tourn.) L. (excl. *Mulgedium* Cass.). Compositae (13). 10*, chiefly N. temp. Old World; 4 in Brit. *L. Scariola* L. (prickly lettuce) is a compass-plant in dry exposed places (see *Silphium*); rapidly spreading in the U.S. as a weed. *L. sativa* L. is the lettuce of salads. Fl. like *Hieracium*.
Lacuna, an open space in tissue.
Lacustris (Lat.), living in lakes.
Ladanum, *Cistus creticus* L., *C. ladaniferus* L.
Ladders, cf. Bamboos.
Ladenbergia Klotzsch (*Cascarilla* Wedd. p.p.). Rubiaceae (I. 5). 10 S. Am. Bark astringent, containing alkaloids.
Lady-fern, *Athyrium Filix-femina* Roth.; -'s fingers, *Anthyllis vulneraria* L.; -slipper orchid, *Cypripedium*; -thumb (Am.), *Polygonum Persicaria* L.; -tresses, *Spiranthes autumnalis* Rich.
Ladyginia Lipsky. Umbelliferae (III. 6). 1 C. As.
Laelia Lindl. Orchidaceae (II. 6). 25 trop. Am. Often epiphytic.
Laeliocattleya × Rolfe. Orchid hybrid, *Laelia* and *Cattleya*.
Laestadia Kunth. Compositae (3). 4 trop. Andes.
Laetia Loeff. Flacourtiaceae (7). 10 trop. Am., W.I.
Laevigatus, **laevis** (Lat.), smooth.
Lafoensia Vand. Lythraceae. 10 trop. Am.
Lafuentia Lag. Scrophulariaceae (III. 1). 1 S. Spain.
Lagarinthus E. Mey. = *Schizoglossum* E. Mey. (Asclep.).
Lagarosiphon Harv. Hydrocharidaceae. 9 Afr., Madag.
Lagascea Cav. Compositae (5). 10 C. Am.
Lagenandra Dalz. Araceae (VII). 5 Ceylon, S. India.
Lagenanthus Gilg. Gentianaceae (1). 1 Colombia.
Lagenaria Ser. Cucurbitaceae (3). 1 palaeotrop., *L. vulgaris* Ser. (calabash-cucumber). The outer woody pericarp makes a flask.

- Lagenia** E. Fourn. (*Araujia* p.p.). Asclepiadaceae (II. 1). 2 Brazil.
- Lagenias** E. Mey. (*Sebaea* p.p. *BH.*). Gentianaceae (I). 1 Cape Colony.
- Lagenocarpus** Nees. Cyperaceae (II). 15 trop. S. Am.
- Lagenophora** Cass. Compositae (3). 15 Japan to N.Z., Chili.
- Lagerstroemia** L. Lythraceae. 25 palaeotrop. Some heterostyled like *Lythrum*. Cult. orn. fl. trees. Some provide good timber.
- Lagetta** Juss. Thymelaeaceae. 3 W. Ind. *L. Lintearia* Lam. is the lace tree. Its bast-fibres on removal from the stem (by maceration, &c.) form a network used for making dresses, &c.
- Laggera** Sch.-Bip. ex Hochst. Compositae (4). 12 palaeotrop.
- Lagoa** Durand. Asclepiadaceae (II. 1). 1 Brazil.
- Lagochilium** Nees = *Aphelandra* R. Br. (Acanth.).
- Lagochilus** Bunge. Labiatae (VI). 15 W. As.
- Lagoecia** L. Umbelliferae (II. 2). 1 Medit. One of the usu. two loc. of the ovary is aborted.
- Lagophylla** Nutt. Compositae (5). 6 W. N. Am.
- Lagos rubber**, *Funtumia elastica* Stapf.
- Lagoseris** Hoffing. et Link = *Crepis* L. p.p. (Comp.).
- Lagotis** J. Gaertn. Scrophulariaceae (III. 1). 10 N. and C. As.
- Laguna** Cav. = *Hibiscus* L. (Malv.).
- Lagunaria** G. Don. Malvaceae (4). 1 E. Austr., Norfolk I., Howe I.
- Laguncularia** Gaertn. f. Combretaceae. 1 W. trop. Afr., Am. (mangrove).
- Lagurus** L. Gramineae (8). 1 Medit., *L. ovatus* L., cult. orn.
- Lahia** Hassk. (*Durio* p.p. *EP.*). Bombacaceae. 1 Borneo.
- Lallemantia** Fisch. et Mey. Labiatae (VI). 4 W. As.
- Lamarchea** Gaudich. Myrtaceae (II. 1). 1 W. Austr.
- Lamarckia** Moench. Gramineae (10). 1 Medit. Cult. orn.
- Lamb-kill** (Am.), *Kalmia angustifolia* L.; -'s lettuce, *Valerianella*, (Am.) *Fedia*; -quarters, *Chenopodium*.
- Lambertia** Sm. Proteaceae. 8 Austr.
- Lamellisepalum** Engl. Rhamnaceae. 1 trop. Afr.
- Lamiacanthus** O. Ktze. Acanthaceae (IV. A). 1 Java.
- Lamiales** (*BH.*). The 10th order of Gamopetalae.
- Lamina**, the blade of a l.
- Lamium** (Tourn.) L. Labiatae (VI). 40 Eur., As., extratrop. Afr. 5 in Brit., incl. *L. album* L. (white dead-nettle), *L. amplexicaule* L. (hen-bit), *L. purpureum* L. (purple dead-nettle) and *L. Galeobdolon* Crantz (yellow archangel). *L. album* has sympodial rhizomes and large white homogamous humble-bee fls. *L. amplexicaule* has cleist. fls. in spring and autumn; they look like ordinary buds with a small C, and are pollinated without opening.
- Lamourouxia** H. B. et K. Scrophulariaceae (III. 3). 20 trop. Am.
- Lampaya** Phil. Verbenaceae (I). 1 Chili.
- Lampocarya** R. Br. = *Gahnia* Forst. p.p. (Cyper.).
- Lamprachaenium** Benth. Compositae (1). 1 Indomal.
- Lamprocaulos** Mast. (*Elegia* p.p. *EP.*). Restionaceae. 2 S. Afr.
- Lamprochlaenia** Börner = *Carex* L. p.p. (Cyper.).
- Lamprococcus** Beer (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 8 trop. Am. Cult. orn. infl.
- Lamprodithyros** Hassk. = *Ancilema* R. Br. p.p. (Commelin.).

- Lamprolobium** Benth. Leguminosae (III. 6). 1 Queensland.
Lamprospermum Klotzsch (*Matayba* EP.). Sapindaceae (I). 2 Guiana.
Lamprothamnus Hiern. Rubiaceae (II. 1). 1 Zanzibar.
Lamprothyrsus Pilger. Gramineae (9). 1 S. Am.
Lamprotis D. Don = *Erica* Tourn. p.p. (Eric.).
Lampsana (Tourn.) Rupp. = *Lapsana* L. (Comp.).
Lanaria Ait. Amaryllidaceae (III) (*Haemodor. BH.*). 1 S. Afr.
Lanatus (Lat.), woolly.
Lance, *Dendrocalamus*; -wood, *Duguetia*, *Oxandra*, *Tournefortia*, &c.
Lancea Hook. f. et Thoms. Scrophulariaceae (II. 6). 2 Tibet, China.
Lanceolate (l.), 3 times as long as broad, tapering gradually.
Landolphia Beauv. Apocynaceae (I. 1). 30 trop. and S. Afr. Several are lianes with curious hook tendrils like *Strychnos*. Fr. a large berry full of an acid pulp composed of the hair-structures on the seeds. Several, e.g. *L. Kirkii* Dyer, *L. comorensis* Benth. et Hook. f., &c., yield rubber, the coagulated latex. It is known in trade as African and Madagascar rubber.
Landtia Less. (*Arctotis* p.p. EP.). Compositae (10). 4 S. Afr., Abyss.
Landukia Planch. (*Vitis* p.p.). Vitaceae. 1 Java.
Lanessania Baill. Moraceae (II). 1 N. Brazil.
Langlassea H. Wolff. Umbelliferae (III. 6). 1 Mexico.
Langloisia Greene (*Gilia* p.p.). Polemoniaceae. 4 S.W. U.S.
Langsdorffia Mart. Balanophoraceae. 1 trop. Am. *L. hypogaea* Mart.
Lanium Lindl. (*Epidendrum* p.p. EP.). Orchidaceae (II. 6). 4 trop. Am.
Lankesteria Lindl. Acanthaceae (IV. A). 5 trop. W. Afr.
Lannea A. Rich (*Odina* BH., *Calesium* EP.). Anacardiaceae (2). 15 palaeotrop.
Lanneoma Delile (*Lannea* p.p.). Anacardiaceae (2). 1 Abyss., E. Afr.
Lanose, **lanuginose**, woolly.
Lansbergia De Vriese = *Trimezia* Salisb. (Irid.).
Lansium Rumph. Meliaceae (III). 4 Indomal. *L. domesticum* Jack ed. fr.
Lantana L. Verbenaceae (I). 60 trop. and subtrop. Shrubs, often used for hedges. Some have ed. fr.
Lantanopsis Wright. Compositae (5). 3 Cuba, S. Domingo.
Lapageria Ruiz et Pav. Liliaceae (X). 1 Chili, *L. rosea* Ruiz et Pav., a climbing shrub with ed. fr., cult. orn. fl.
Lapatero (W.I.), *Copaifera officinalis* L.
Lapathum (Tourn.) Adans. = *Rumex* L. p.p. (Polygon.).
Lapeyrousia Pourr. Iridaceae (III). 30 S. Afr. to Abyss. Cult. orn. fl.
Laphamia A. Gray. Compositae (6). 15 S. U.S., Mexico.
Lapiedra Lag. Amaryllidaceae (I). 2 Spain, Morocco.
Lapithea Griseb. (*Sabbatia* BH.). Gentian. (I). 1 Carolina to Texas.
Laplacea H. B. et K. (*Haemocharis* EP.). Theaceae. 25 trop. As., Am., W.I.
Laportea Gaudich. Urticaceae (I). 30 trop. Many sting violently.
Lappa (Tourn.) Rupp. = *Arctium* L. (Comp.).
Lappago Schreb. = *Tragus* Hall. (Gram.).
Lappula Moench. (*Echinospermum* BH.). Boragin. (IV. 2). 60 temp.
Lapsana L. Compositae (13). 9 N. temp. [*]. *L. communis* L. (nipplewort) in Brit. The fls. are inconspicuous and pollinate themselves. There is no pappus.

Larch, *Larix*.

Laretia (Gill. et Hook. Umbelliferae (1. 2). 1 Andes of Chili.

Laricopsis Kent. = *Pseudolarix* Gord. Coniferae (Pinac.).

Lardizabala Ruiz et Pav. Lardizabalaceae. 2 Chili. Tough fibre from the stems of *L. bitermata* Ruiz et Pav.

Lardizabalaceae (EP.; *Berberidaceae* p.p. BH.). Dicot. (Archichl. Ranales). 7 gen. 15 sp. Himal. to Japan, Chili. Mostly climbing shrubs with palmate l. Fls. in racemes, usu. in the axils of the scale-l. at the bases of the branches, polygamous or diclinous. Usual formula $P\ 3+3$, $A\ 3+3$, $\underline{G}\ 3$ or more. 2 whorls of small honey-leaves (see Ranunculaceae) often occur between P and A; sta. sometimes united; anthers extrorse; ovules ∞ in longitudinal rows on the lat. walls (cf. Nymphaeaceae), anatr. The fl. of either sex shows rudiments of the organs of the other sex. Berry. Embryo small and straight, in copious endosp. *Chief genera*: Decaisnea, Akebia, Lardizabala.

Larix Tourn. ex Adans. Coniferae (Pinac. 20; see C. for genus characters). 8 Eur., N. As., N. Am. The general chars. are those of Cedrus, but the l. are deciduous, and the cones ripen in a single year. *L. europaea* DC. (*L. decidua* Mill.) is the common larch, cult. on a large scale for its wood, bark (used in tanning) and turpentine (Venice t.). Others are also important, e.g. *L. americana* Michx. (tamarack).

Larkspur, *Delphinium*.

Larochea Pers. = *Crassula* Dill. p.p. (Crass.).

Larrea Cav. Zygophyllaceae. 4 subtrop. Am. Xerophytes. *L. mexicana* Moric. (Mexico, &c.) is the creosote plant, which forms a dense scrub-veg. and binds the drifting sand together. Its strong smell prevents it from being eaten by animals.

Larrea scrub, a scrub association char. by *Larrea mexicana* Moric.

Lasallea Greene (*Aster* p.p.). Compositae (3). 3 N. Am.

Lascadium Rafin. Inc. sed. 1 S. U.S.

Laseguea A. DC. Apocynaceae (II. 1). 10 trop. S. Am.

Laserpitium L. Umbelliferae (III. 7). 35 Eur., N. Afr., As.

Lasia Lour. Araceae (IV). 2 Indomal.

Lasiacis Hitchcock (*Panicum* p.p.). Gramineae (5). 6 N. Am.

Lasiadenia Benth. Thymelaeaceae. 1 Guiana.

Lasiagrostis Link = *Stipa* L. (Gram.).

Lasiandra DC. = *Tibouchina* Aubl. (Melast.).

Lasianthemum Klotzsch (*Tulisia* p.p. EP.). Sapindaceae (1). 2 Guiana.

Lasianthera Beauv. Icacinaceae. 1 trop. W. Afr.

Lasianthus Jack. Rubiaceae (II. 5). 90 Indomal.

Lasiocarpus Liebm. Malpighiaceae (1). 1 Mexico.

Lasiochloa Kunth. Gramineae (10). 4 S. Afr.

Lasiocladius Boj. ex Nees. Acanthaceae (IV. B). 2 Madag.

Lasiococca Hook. f. Euphorbiaceae (A. II. 2). 1 Sikkim.

Lasiocoma Bolus. Compositae (8). 1 S. Afr.

Lasiocorys Benth. (*Leucas* p.p. EP.). Labiatae (VI). 7 Afr.

Lasiocroton Griseb. Euphorbiaceae (A. II. 2). 1 Jamaica.

Lasiodiscus Hook. f. Rhamnaceae. 5 trop. Afr., Madag.

Lasiopetalum Sm. Sterculiaceae. 25 Austr.

- Lasiopogon** Cass. Compositae (4). 3 S. Afr., Medit.
Lasiorrhiza Lag. = *Leuceria* Lag. p.p. (Comp.).
Lasiosiphon Fresen. (*Gnidia* EP.). Thymelaeaceae. 20 palaeotrop.
Lasiospermum Lag. Compositae (7). 3 S. Afr.
Lasiospora Cass. = *Scorzonera* Tourn. p.p. (Comp.).
Lasiostelma Benth. Asclepiadaceae (II. 3). 4 S. Afr.
Lasiostoma Schreb. = *Strychnos* L. (Logan.).
Lassa O. Ktze. = *Pavonia* Cav. (Malv.).
Lassonia Buchoz. Magnoliaceae. 2 China.
Lastarriaca Remy. Polygonaceae (I. 1). 2 Calif., Chili.
Lasthenia Cass. Compositae (6). 10 W. Am.
Lastrea Presl = *Dryopteris* Adans. (Polypod.).
Latace Phil. Liliaceae (IV). 1 Chili.
Latania Comm. ex Juss. Palmae (II). 3 E. Afr., Mascarenes.
Lateral branching, cf. Branch.
Latex, a milky fluid contained in special vessels or cells of the tissues, *Alismaceae*, *Apocynaceae*, *Araceae*, *Asclepiadaceae*, *Euphorbiaceae*, *Compositae* (Cichorieae), *Galactia*, *Moraceae*, *Sapotaceae*, &c. Cf. Guttapercha, Rubber, Balata; **laticiferous**, latex-bearing.
Lathraea L. Orobanchaceae. 5 temp. Eur., As. *L. Squamaria* L. in Brit. (tooth-wort) is a total parasite living upon the roots of hazel, beech, &c. It has a thick rhiz. bearing 4 rows of tooth-like scaly l. The fl. shoot comes above ground and bears a raceme of purplish fls., all bent round to the same side of the infl., protogynous. The scales upon the rhiz. are hollowed, each containing a branched cavity opening to the outside by a narrow slit at the base of the back of the l. This arises by a development similar to that which forms the chambers in the l. of *Empetrum*, *Cassiope*, &c. In the small lat. cavities opening out of the main one there are found peculiar glandular organs, resembling those of insectivorous plants. Small insects, &c. are often found in these leaves (cf. bladders of *Utricularia*, &c.) and it has been supposed that these organs absorb their proteids like the glands of *Drosera*, &c. This however is doubtful. *L. clandestina* L. is parasitic upon willows. The capsule of *L.* splits explosively. [For details see Heinricher, *Die Schuppenwurz*, Stuttgart, 1908.]
Lathriogyna Eckl. et Zeyh. Leguminosae (III. 3). 1 S. Afr.
Lathrophytum Eichl. Balanophoraceae. 1 Rio de Janeiro.
Lathyrus (Tourn.). L. (incl. *Orobis* L.). Leguminosae (III. 9). 110 N. temp., and Mts. of trop. Afr. and S. Am. 10 in Brit. (pea), including *L. Aphaca* L. and *L. Nissolia* L. The former has large green stipules performing assim. functions, whilst the l. is transformed into a tendril; the latter has its petioles flattened into phyllodes and has no l. blade at all (see *Acacia*). *L. macrorrhizus* Wimm. has tuberous roots which may be eaten like potatoes. *L. sativus* L. (Jarosse) and *L. Cicera* L. are cult. in S. Eur. as fodder and are also eaten like chick-pea (*Cicer*). *L. odoratus* L. is the sweet-pea. The fl. is like that of *Vicia*; on the style is a tuft of hairs that brushes the pollen out of the apex of the keel, where it is shed by the anthers. *L. latifolius* (everlasting pea) also cult. orn. fl.
Lati- (Lat. pref.), broad; **-folius**, broad-leaved, &c. &c.
Latipes Kunth. Gramineae (3). 1 Senegal to Sind.

Latouchea Franch. Gentianaceae (I). 1 China.

Latouria Blume (*Dendrobium* p.p. *BH.*). Orchid. (II. 15). 1 New Guinea.

Latreillea DC. = *Ichthyothere* Mart. (Comp.).

Latrobea Meissn. Leguminosae (III. 2). 6 W. Austr.

Latua Phil. Solanaceae (2). 1 Chili.

Laubertia A. DC. Apocynaceae (II. 1). 2 Peru, Bolivia.

Laugeria Vahl (*Gnettarida* p.p. *EP.*). Rubiaceae (II. 2). 2 W.I.

Launaea Cass. Compositae (13). 30 trop. and subtrop. *L. pinnatifida* Cass. a char. plant of sandy trop. beaches.

Lauraceae (*EP.*, *BH* incl. *Hernandiaceae*). Dicots. (Archichl. Ranales; Daphnales *BH.*). 40 gen. 1000 sp. trop. and subtrop.; chief centres of distr. S.E. As. and Brazil. Trees and shrubs with leathery evergr. alt. exstip. l. The tissues contain numerous oil-cavities. *Cassytha* is an interesting parasite. Infl. racemose, cymose, or mixed. Fl. actinom., apet., usu. 3-merous, ♂ or monoec. Formula usu. P_{2n}, A_{4n}, G_n . P in two whorls, perig.; A perig. or epig., in 3 or 4 whorls, some of which are commonly reduced to stds.; anther usu. 4-loc. opening by valves (*cf.* *Berberidaceae*), usu. intr., but in many cases those of the third whorl extr. The axis is $\pm$ concave, and the ovary is free from it at the sides. $\underline{G}$ 1 (Payer, Baillon) or more probably 3 (Eichler), forming a 1-loc. ovary, with 1 pend. anatrop. ov. Fr. a berry, often $\pm$ enclosed by the cup-like recept., which also becomes fleshy in these cases. Embryo straight; seed exalb. The position of the L. in the system is doubtful; they apparently form the connecting link between the Ranales (to the more typical fams. of which they are linked by Monimiaceae and Calycanthaceae) and the Thymelaeales. Important economic plants are found in nearly all the genera mentioned below. [See *Nat. Pfl.* and Mez. in *Bot. Jahresb.* 1889, p. 459, and *Bot. Centr.* 54, p. 275 (abstracts).]

Classification and chief genera (after Pax):

I. **PERSEOIDEAE** (anther 4-loc.): *Cinnamomum*, *Persea*, *Sassafras*, *Litsea*.

II. **LAUROIDEAE** (anther 2-loc.): *Cryptocarya*, *Lindera*, *Laurus*, *Cassytha*.

Laurel, *Laurus nobilis* L.; **Alexandrian** -, *Calophyllum Inophyllum* L.; **bay** -, *Laurus nobilis* L.; **cherry** -, *Prunus Laurocerasus* L.; **Japan** -, *Aucuba japonica* Thunb.; **Portugal** -, *Prunus lusitanica* L.; **sea-side** - (W. I.), *Phyllanthus*; **spurge** -, *Daphne Laureola* L.; **West Indian** - (W.I.), *Prunus occidentalis* Sw.

Laurelia Juss. Monimiaceae. 1 N.Z., 1 Chili. *L. Novae-Zelandiae* A. Cunn. supplies a useful timber. The frs. of *L. aromatica* Juss. are used as a spice under the name Peruvian nutmegs.

Laurembergia Berg. (*Serpicula* L.). Haloragidaceae. 20 palaeotrop. and S. Afr.

Laurentia Michx. ex Adans. Campanulaceae (III). 10 Medit., S. Afr., N. Am.

Laurestinus (Am.), *Viburnum*.

Lauridia Eckl. et Zeyh. (*Elaeodendron* *BH.*). Celastraceae. 1 S. Afr.

Laurineae (*BH.*), Lauraceae.

Laurium (Cl.), a drain formation.

- Laurocerasus** (Tourn.), M. Roem. = *Prunus* L. p.p. (Ros.).
- Laurophyllus** Thunb. (*Botryceras* BH.). Anacardiaceae (3). 1 S. Afr.
- Laurus** (Tourn.) L. Lauraceae (11). 2, *L. nobilis* L. the true laurel or sweet bay, Medit. (l. aromatic, used in condiments, &c., berries in veterinary medicine), and *L. canariensis* Webb et Berth., Canaries and Madeira. Fls. unisexual by abortion.
- Lautenbergia** Baill. (*Alchornea* p.p. BH.). Euph. (A. 11. 2). 2 Madag.
- Lauterbachia** Perkins. Monimiaceae. 1 New Guinea.
- Lavalleopsis** Van Tiegh. Olacaceae. 3 W. trop. Afr.
- Lavandula** Tourn. ex L. Labiatae (v, *q.v.* for gen. char.). 20 Medit. to India. From *L. vera* DC. (lavender) is obtained oil of lavender, by distillation of the fls.; it is used in painting, and in the manufacture of lavender water. *L. Spica* Cav. and *L. Stoechas* L. are also used. The protandr. fls. are visited by bees and form a good source of honey.
- Lavatera** L. Malvaceae (2). 20 Medit., Austr., mid-As. *L. arborea* L., tree-mallow, on rocks on the Brit. coast.
- Lavauxia** Spach (*Oenothera* p.p. BH.). Onagraceae (2). 8 W. Am.
- Lavender**, *Lavandula vera* DC. &c.; **cotton-**, *Santalina*; **sea-**, *Statice*.
- Lavenia** Sw. = *Adenostemma* Forst. (Comp.).
- Lavidia** Phil. Compositae (12). 1 Patagonia.
- Lavigeria** Pierre (*Icacina* p.p.). Icacinaceae. 1 Cochinchina.
- Lavoisiera** DC. Melastomaceae (1). 50 Brazil.
- Lavradia** Vell. ex Vand. Ochnaceae. 6 Brazil.
- Lawia** Griff. ex Tul. Tristichaceae. 1 Ceylon to Bombay Ghats. Thallus of shoot nature, creeping, with endogenous shoots on upper side.
- Lawsonia** L. Lythraceae. 1 palaeotrop. *L. inermis* L. The powdered l. form the cosmetic, henna, used in the East to stain the finger-nails, &c., red.
- Laxmannia** R. Br. (*Bartlingia* F. Muell.). Liliaceae (111). 8 Austr.
- Laxus** (Lat.), loose.
- Layia** Hook. et Arn. Compositae (5). 14 W. N. Am. Cult. orn. fl.
- Leader**, top bud of a monopodial shoot, *Abies*.
- Lead-tree** (W.I.), *Leucaena glauca* Benth.; **-wort** (W.I.), *Plumbago*.
- Leaf**, a thin green expanded organ, borne on the stem at the nodes. The interior of an ordinary l. is made up of a mass of spongy green tissue (*mesophyll*), covered by an epidermis which contains *stomata* leading to the intercellular spaces in the interior, and whose outer wall is covered by a *cuticle* of waxy or corky nature. The vascular bundles that run through the l. and hold it outstretched are called the *veins* or *nerves*. The l. shows distinction into a *base* abutting on the stem and often bearing a pair of green or membranous expansions (*stipules*), and a *blade* or *lamina*, often with a stalk or *petiole* between. Such a l. has an upper or *ventral* surface, and a lower or *dorsal*, and is markedly *dorsiventral* in structure; it places itself $\pm$ horiz. in what is called its *fixed light position*. Others (*isobilateral*, *q.v.*) have symmetrical structure on both sides, and place themselves with their edges to the light (*phyllodes* (*q.v.*) also come into this category), and yet others (*centric*, *q.v.*) have symmetrical structure all round, and stand with their apices to the light. Many l. exhibit *sleep movements*

at night, or movements during heat or dryness (*cf.* Movements). The fall of a l. is often effected by an *absciss-layer*, or stratum of cork which separates it from the stem, and then splits, leaving a *leaf-scar* upon the stem. L. with such a layer are called *articulate*, without, *non-articulate*.

Under other than mesophytic conditions such structure as just described shows many modifications; *cf.* Climbing Plants, Insectivorous Plants, Parasites, Saprophytes, Water Plants, Xerophytes. It is also modified for Storage (*q.v.*) of reserves, or for Vegetative Reproduction (*q.v.*).

In external form l. show very great variety, and the grouping of gen. into sp. is largely determined by this, so that it is necessary to understand the use of the technical terms employed in such work, before one can use a flora with any advantage. An outline of such terms and their use follows.

Descriptive Terms. The student should practise describing leafy shoots until expert in handling terminology, but there is no need to commit the terms to memory. At first he should describe in detail in the order given below, but afterwards try to render his descriptions short and pithy without sacrifice of essentials; this can only be well done by comparison with related forms to see what points are common to all.

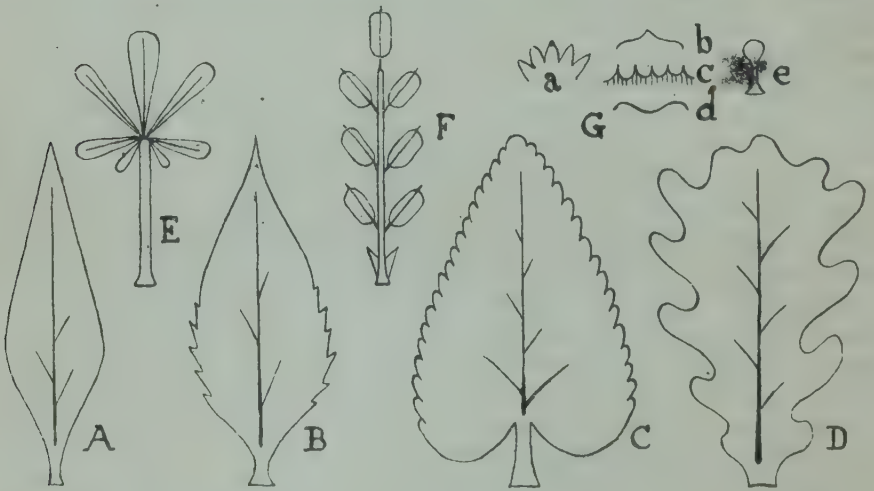
L. as to phyllotaxy (*q.v.*) or arrangement may be *radical*, or on the subaerial stem (*cauline*); *whorled* (*verticillate*), *opposite* (and then *decussate* if each pair is $\perp$ the next, *connate* if the two are concrescent as in *Lonicera*, *anisophyllous* if unequal in size or shape), or *alternate* (the phyllotaxy fraction may be given, or the number of ranks described by the terms *di-*, *tri-stichous*, &c.). With regard to *insertion* or mode of union with the stem the l. may be *petiolate* or *sessile* (*i.e.* with or without stalk respectively; the petiole is descr. like a stem), *auricled* (with two lobes of the blade overlapping the stem), *amplexicaul* (the lobes clasping the stem), *sheathing* (as in Grasses, the leaf-base forming a tube round the stem), *perfoliate* (the leaf united round the stem, as in *Bupleurum*), *decurrent* (continued by a wing on the stem, as in thistles), &c. It may bear a *ligule* or scale at the upper end of the leaf-base or sheath, as in Grasses. It may be *stipulate* or *exstipulate* (with or without stip. respectively); the shape, &c. of the stip. is described as if they were l. and they may be free or *adnate* (F in fig., concrescent with the leaf-base or petiole, as in rose), united to other stip., *inter-* or *intra-petiole*, branched, &c. (see Rubiaceae), *ochreate* (sheathing, as in Polygonaceae), or modified in various ways. The *venation* (arrangement of the veins) may be *pinnate* or *palmate*; in the former case there is a *midrib* with lat. veins branching from it, in the latter several equal veins spread out in the l. like the ribs of a fan, from one point. The further ramification of the veins is descr. by *net-veined* (irreg. mesh-work, as in most Dicots.), *parallel-veined* (meshes more or less rectangular, as in most Monocots.), *fork-veined* (veins forking into two, as in Ferns).

L. are divided into *simple* and *compound*, as the stalk bears one or several separate *leaflets*. In the latter case the leaflet is descr. as if

it were a l., and the common stalk is called the *rachis*. If the leaflets spring from the sides of the rachis, as in the pea, the l. is *pinnate* (F), if all from one point *palmate* (E). If the leaflets of a pinnate l., as in many Acacias, are again pinnately cpd., the l. is *bipinnate*. A l. with 3 leaflets (as in clover) is *ternate* or *tri-foliolate*, with 3 ternate leaflets *biternate*. Pinnate l. may be *equally* (*pari-*) *pinnate* (with an even number of leaflets), *unequally* (*impari-*) *pinnate* (with an odd leaflet at the end), or *interruptedly pinnate* (large and small leaflets alt. as in many Rosaceae). A palmate l. with 5 or 7 leaflets is often called *digitate*. The leaflet may have stipule-like organs, or *stipels* (adjective *stipellate*).

The leaf may be *dorsiventral*, *isobilateral*, or *centric*, or replaced by a *phyllode*, *scale*, *pitcher*, or other organ.

The shape of the leaf-blade or leaflet itself, if simple, or the outline of a cpd. l., may be *needle-shaped* or *acicular* as in *Pinus*, *subulate* or awl-shaped, *tubular* as in onion, *linear* (long and narrow as in Grasses), *lanceolate* (about 3 times as long as broad, tapering gradually towards the tip; A in fig.), *ovate* (about twice as long as broad, and tapering towards the tip; B), *cordate* (similar, but heart-shaped at the base; C), *elliptical* (tapering equally to base and tip, and somewhat narrow), *oval* (do. but wider), *oblong* (sides $\parallel$ for some distance, the ends tapering rapidly; F), *reniform* (kidney-shaped), *orbicular* (circular in outline; if the petiole is inserted at the middle of the blade, as in *Tropaeolum*, this leaf is termed *peltate*), *hastate* (with two pointed



FORMS OF LEAVES. A, subsessile, exstip., lanceolate with cuneate base, entire, acute. B, sessile, exstip., ovate, serrate below, entire above, acum. C, petiolate, exstip., cordate, crenate, obtuse. D, sessile, exstip., somewhat obovate, pinnatifid sinuate, obtuse. E, petiolate, exstip., palmate (digitate), with obtuse oblanceolate leaflets. F, impari-pinnate with triangular adnate stips.; leaflets shortly stalked, oblong, apiculate, the laterals oblique. G, *a*, plicate l. in section, *b*, mucronate apex, *c*, dentate spiny margin, *d*, retuse apex, *e*, glandular hair.

lobes sticking out horiz. at the base), *sagittate* (two lobes projecting towards the stem), *spatulate* (spoon-shaped, as in daisy), &c. If a l. be of lanceolate shape but the general tapering be towards the base, it is called *oblanceolate* (E); so also *obovate* or *obcordate*. If wedge-shaped, tapering to the base, it is *cuneate*. The l. may be *oblique* or *asymmetrical* (F), when the midrib divides it into unequal halves, as in *Begonia*.

The l. (or leaflet) may be *entire*, i.e. without notches in the margin (A), or *incised*; the margin may also be fringed or *fimbriate*, *cartilaginous*, *membranous*, wavy or *undulate* (as in holly), curled or *crisped* (as in sea-kale), *spiny* (Gc), *glandular* (with sticky hairs or glands; Ge), *ciliate* (with fine projecting hairs), &c. If the margin has small teeth pointing forwards, it is *serrate* (B), if pointing outwards, *dentate* (Gc); if the teeth are rounded but the notches sharp, the margin is *crenate* (C), if both teeth and notches are rounded, it is *sinuate* (D). If the depth of the divisions is equal to $\frac{1}{4}$ the distance from midrib to margin, i.e. if the incisions are conspicuous in proportion to the size of the blade, other terms come into use. If the notching is from $\frac{1}{4}$ to $\frac{1}{2}$ the depth, the l. is *-fid* (D), if $\frac{1}{2}$ to $\frac{3}{4}$, *-partite*, if over $\frac{3}{4}$, *-sect*. Prefixes of *pinnati-* or *palmati-* are used before these terms to express the particular form of notching, which depends upon the venation. The portions into which the l. is thus divided are termed *lobes* or *segments*. Special terms are employed for such l. as mustard (*lyrate*, the end lobe very large), dandelion (*runcinate*, the lobes pointing backwards), hellebore (*pedate*), &c.

The apex may be *acute* (pointed; A), *obtuse* (blunt; C), *acuminate* (tapering in hollow curves to a long fine point; B), *emarginate* (notched), *retuse* (broadly do.; Gd), *mucronate* (with large stiff point on nearly straight edge; Gb), *apiculate* (do. with small point; F), *truncate* or *praemorse* (broad, straight end, as if bitten off), *cirrrose* (tendrilled).

The surface of the l., as of other parts, may be *glabrous* (without hairs), *pilose* (soft. scattered hairs), *downy* or *pubescent* (fine, soft hairs), *hairy* (coarser), *hispid* (rough, bristly), *tomentose* (with a cottony felt), *woolly*, *glandular-hairy*; *scabrous* (rough), *smooth*, *prickly*, *glaucous* (with bluish waxy gloss), *reticulate* (netted), *rugose* (ridged or wrinkled), *squarrose* (roughly scurfy), &c. Hairs may be *spreading* or *appressed* (flattened down), *simple* (unbranched), *glandular* (Ge), *bifid*, *stellate* (like a starfish), *squamate* (scaly), &c.; prickles may be straight or curved, bent backwards (*retrorse*), &c. The l. may be *dotted* with oil-glands, or *variegated* in colour, green, red, &c.; frequent shades are *fulvous* (tawny), *rubiginose* (rust-coloured), &c. The texture may be *thin* or *herbaceous*, *coriaceous* (leathery), *succulent* or *fleshy*, *membranous* or *scarious* (thin, dry, not green, and flexible or stiff respectively), &c.

L. may be *evergreen* or *deciduous* (falling in winter); in this case *articulate* (cut off by special absciss layer and falling early), or *non-articulate* (hanging on to the stem, though dead, for an indefinite period, as in beech hedges, oak, &c.). The *vernation*, or folding in bud, is descr. like the aestivation of flower-buds (*q.v.*); the following terms are also used to describe the folding of the individual l., *conduplicate* (folded lengthwise as in oak), *plicate* (folded several times;

Ga), *involute* (margins rolled inwards), *revolute* (outwards), *reclinate* (apex bent down to base), *convolute* (rolled spirally, as in *Musa*); conduplicate l. overlapping younger ones thus < < > >, as in *Iris*, are called *equitant*.

When a character is not accurately described by one of the terms given, but is rather half-way between two, both are used; thus a l. may be linear-lanceolate or ovate-cordate. *Sub-*, meaning 'nearly,' is often used as a prefix to adjectives, e.g. subsessile, subacute. As an example of the use of these technical terms, we quote from Lindley the descriptions of two leaves:

Lilac: leaves opposite, exstipulate, roundish-cordate, very acute, thin, smooth, rather longer than the linear channelled petiole.

Garden Strawberry: leaves all radical, ternate, dark-green, somewhat shining, very coarsely serrated; with strong parallel oblique veins, silky beneath; leaflets nearly sessile, roundish oblong, entire towards the base, shorter than the semi-cylindrical hairy petioles; stipules membranous, lanceolate, acuminate, half adnate.

For other details of leaf structure and modification, see Anisophylly, Bud, Climbing Plants, Concrecence, Dimorphism, Dripteris, Insectivorous Plants, Parasites, Phyllodes, Phyllotaxy, Saprophytes, Stipule, Storage, Vegetative Reproduction, Water-plants, Xerophytes, and articles below.

Leaf, climbing, cf. Climbing Plants; - **colour**, *Amherstia*, *Brownea*, *Castilleja*, *Cinnamomum*, *Haematoxylon*, *Saraca*; - **cushion**, *Cactaceae*; - **cutting ants**, *Acacia*; - **fall** in dry season, *Bombax*, *Caatingas*, *Cochlospermum*; - **mosaic**, the fitting in of l. with one another to make the best use of light and air available, *Aesculus*, *Hedera*, *Tiliaceae*; - **movements**, cf. Movement.

Leandra Raddi. Melastomaceae (1). 200 trop. Am., W.I.

Leather-leaf (Am.), *Cassandra*; - **wood**, *Cyrilla*.

Leavenworthia Torr. Cruciferae (2). 4 Atl. N. Am.

Lebeckia Thunb. Leguminosae (III. 3). 25 S. Afr.

Lebetanthus Endl. Epacridaceae (1). 1 Fuegia, Patagonia.

Lebidiera Baill. = *Cleistanthus* Hook. f. (Euph.).

Lebidieropsis Muell.-Arg. (*Cleistanthus* p.p. *BH.*). Euphorbiaceae (A. I. 2). 1 Indomal.

Lecananthus Jack. Rubiaceae (I. 7). 3 Malaya.

Lecaniodiscus Planch. ex Benth. Sapindaceae (1). 2 trop. Afr.

Lecanopteris Reinw. Polypodiaceae. 7 Malaya.

Lecanorchis Blume. Orchidaceae (II. 2). 4 Malaya, Japan.

Lecanosperma Rusby. Rubiaceae (I. 5). 1 Bolivia.

Lecanthus Wedd. Urticaceae (2). 1 Indomal., Abyssinia.

Lechea Kalm. ex L. Cistaceae. 4 N. Am., W. I.

Lechlera Miq. Inc. sed. Nomen.

Lechuguilla, *Agave*.

Leciscium Gaertn. Myrtaceae (inc. sed.). Nomen.

Lecocarpus Decne. Compositae (5). 1 Galapagos.

Lecokia DC. Umbelliferae (III. 4). 1 Crete to Persia.

Lecomtea Pierre ex Van Tiegh. (*Harmandia* p.p.). Olac. 1 trop. Afr.

Lecomtedoxa Dubard (*Mimusops* p.p.). Sapotaceae (II). 1 Gaboon.

Lecomtea A. Rich. (*Paederia* p.p. *EP.*). Rubiaceae (II. 6). 2 Madag.

Lecostemon (Moq. et Sesse ex) DC. Rosaceae (vi). 6 Brazil to Mexico.

Lectandra J. J. Smith. Orchidaceae (II. a. III). 1 Java.

Lecticula Barnhart (*Utricularia* p.p.). Lentibulariaceae. 1 E. U.S.

Lecythidaceae (EP.; *Myrtaceae* p.p. BH.). Dicot. (Archichl. Myrtiflorae). 18 gen. 140 sp. trop. trees; l. generally in bunches at the ends of the twigs, simple, exstip. Fls. single or in racemose infls., ♂, perig. or epig., with complete fusion of recept. and ovary. K 4–6, C 4–6, A ∞ in several whorls, the sta. more or less united at base. G with 2–6 or more loc., in each 1–∞ anatrop. ov. There is usually an intra-staminal disc as well as one under petals and sta. Berry or capsule. No endosp. Bertholletia and others are economic plants. *Chief genera*: Barringtonia, Napoleona, Couroupita, Lecythis, Bertholletia.

Lecythis Loeffl. Lecythidaceae. 30 trop. S. Am. Fr. a huge wooden caps., opening by a lid. The oily seeds are eaten as Sapucaia nuts. The empty fr. is termed a 'monkey-pot'; it is filled with sugar, the monkey inserts its hand, clasps it, and then cannot withdraw it.

Lecythopsis Schrank (*Couratari* EP.). Lecythidaceae. 2 Brazil.

Leda C. B. Clarke (*Leptostachya* p.p.). Acanthaceae (IV. B). 5 Malay Penins.

Ledebouriella H. Wolff (*Trinia* p.p.). Umbelliferae (III. 5). 2 As.

Ledenbergia Klotzsch (*Flueckigeria* O. Ktze.). Phytolaccaceae. 1 trop. S. Am., W. I.

Ledermannia Mildbr. et Burret. Tiliaceae. 1 trop. Afr.

Ledermanniella Engl. Podostemaceae. 1 Cameroons.

Ledocarpon Desf. = *Balbisia* Cav. (Geran.).

Ledonia Spach = *Cistus* Tourn. p.p. (Cist.).

Ledothamnus Meissn. Ericaceae (I. 3). 1 Guiana.

Ledum Rupp. ex L. Ericaceae (I. 1). 3 sp., two in N. Am., *L. palustre* L. circumpolar. The leaves are rolled back (cf. *Empetrum*). Seeds winged at ends. This sp. is used in Labrador as tea.

Leea Royen ex L. Vitaceae. 45 palaeotrop.

Leechee, *Litchi chinensis* Sonner.

Leek, *Allium Porrum* L.

Leersia Soland. ex Sw. Gramineae (6). 5 N. temp. and trop. |*. Marsh grasses similar to *Oryza*, and used as fodder in As. *L. oryzoides* Sw. (Eur.) has cleistogamic fls. (Darwin, *Forms of Fls.*, p. 335).

Lefebvreia A. Rich. (*Peucedanum* p.p. EP.). Umbellif. (III. 6). 4 trop. Afr.

Lefrovia Franch. Compositae (12). 1 Bolivia.

Legendrea Webb. et Berth. Convolvulaceae (1). 1 Canaries.

Legitimate pollination, *Lythrum*, *Primula*.

Legnephora Miers = *Pericampylus* Miers (Menisperm.).

Legume, a fr. of one cpl., dehiscing on both sides, *Leguminosae*.

Leguminosae. Dicotyledons (Archichl. Rosales). The second largest fam. of flowering plants, with 500 gen. and 12,000 sp., cosmop. Mimosoideae and Caesalpinioideae are mostly trop., Papilionatae mostly temp. (abundant on steppes, &c.). The account here given is largely condensed from that of Taubert in *Nat. Pfl.*

Living in every soil and climate they show great variety in habit—trees, shrubs, herbs, water-plants, xerophytes, climbers, &c. The roots of most exhibit peculiar *tubercles*—metamorphosed lat. roots containing peculiar bacterial organisms (*Rhizobium* sp.). Plants provided with these are able to take up much more atmospheric nitrogen. The plant appears actually to consume the ‘bacteroids’ which live in its cells, after they have stored up in themselves a considerable amount of nitrogenous material. Hence the value of the L. as a crop on poor soil, or as preceding wheat in the rotation of crops; for instead of impoverishing the soil they enrich it, either by the nitrogen contained in their roots and liberated as these decay, or by that of the whole pl. if ploughed in as ‘green manure.’

Stem commonly erect; many climbers. Some, *e.g.* *Vicia*, climb by leaf-tendrils, some, *e.g.* *Bauhinia*, by stem-tendrils, some by hooks (modified in *Caesalpinia*, &c., emergences in *Acacia*, &c.), some by twining. Creeping stems, rooting at the nodes, also occur. Thorns, usu. modified branches (*e.g.* *Gleditschia*) or stipules (*Acacia*), are common. The stems of the erect trop. sp. often branch so that the branches run parallel and erect, and bear crowns of l. at the top. The stems of many lianes are peculiarly shaped, often flat, or corrugated in various ways, owing to peculiar growth in thickness.

L. usually alt., stip., and nearly always cpd. Many have very small l., *e.g.* *Ulex*, or scaly l. and flat stems, *e.g.* *Carmichaelia*. The stipules vary much in size, &c. (see *Acacia*, *Lathyrus*, *Vicia*). The l. usu. perform sleep-movements at night, some moving upwards, some downwards, or in other ways, but finally usu. placing the leaflet edge-wise to the sky. In *Mimosa* and *Neptunia* the l. are sensitive to a touch and at once assume the sleep-position, recovering after a time. In *Desmodium gyrans* the lat. leaflets execute continuous spontaneous movements as long as the temperature is high enough.

Inf. apparently always racemose, but with variety; simple raceme very common, also panicle and spike. Dorsiventral racemes, resembling the cymes of *Boraginaceae*, also occur (*e.g.* *Dalbergia*). The fls. are regular (and then frequently polygamous) or irreg. (and then usu. ♀); recept. usu. convex or flat, so that at most the fl. is slightly perig. K developed in ascending order, usu. 5-merous, the odd (oldest) sepal anterior; the sepals $\pm$ united. C polypetalous, alt. with the K; aestivation valvate (*Mimosoideae*), ascending imbr. (*Caesalpinioideae*),



Floral diagrams of *Vicia Faba* (Papilionatae) and *Acacia latifolia* (Mimosoideae), after Eichler (modified).

or descending (Papilionatae). In many cases it is $\perp$ to a high degree, having a large petal posterior (vexillum or standard), two lateral (alae or wings), and two anterior $\pm$ joined to form a keel or carina. A typically of 10 sta., free or united into a tube; in the latter case the tenth sta. (the posterior one) often remains free, so as to leave a slit in the tube, only covered loosely by this sta. Many variations are found. In cases where a keel is present, the sta. are enclosed in it. *G* typically of one cpl. with its ventral side directly posterior; long style and terminal stigma. There are two rows of ovules (alt. with one another so as to stand in one vertical rank), anatr. or amphitr., ascending or pend.

Fertilisation (Papilionatae). The keel encloses the essential organs, protecting them from rain, &c. and rendering the fl. complex. Honey is secreted by the inner sides of the sta. near their base, and accumulates in the stamen-tube round the base of the ovary. The tenth sta. is free of the tube, and at the base, on either side of it, are two openings leading to the honey. The honey is thus concealed and at some depth, so that a clever insect with a tongue of moderate length is required. All this points to the P. being bee-flowers (class H), as in fact is the case. Insects alight upon the wings and depress them by their weight, whilst they probe for honey under the standard. The wings are always joined to the keel, usually by a protuberance in the former fitting into a suitable hollow in the latter, so that the keel is thus depressed likewise. This causes the emergence of the essential organs, the stigma usu. coming first, so that a fair chance of cross-fert. exists. Self-pollination usu. occurs when the insect flies off, leaving the keel to return to its former position.

“Four different types of structure may be distinguished (in Papilionatae) according to the manner in which the pollen is applied to the bee: (1) P. in which the sta. and stigma emerge from the carina and again return within it. They admit repeated visits; *e.g.* Trifolium, Onobrychis. (2) P. whose essential organs are confined under tension and explode. In these only one insect's visit is effective; *e.g.* Medicago, Genista, Ulex. (3) P. with a piston mechanism which squeezes the pollen in small quantities out of the apex of the carina, and not only permits but requires numerous insect visits; *e.g.* Lotus, Ononis, Lupinus. (4) P. with a brush of hairs upon the style which sweeps the pollen in small portions out of the apex of the carina. They for the most part require repeated insect visits; *e.g.* Lathyrus, Vicia.” (Müller.) Cleistogamy is fairly common. In several cases the stigma in the unvisited fl. lies in the keel among the pollen, but it has been shown that it only becomes receptive (if young) when rubbed, so that autogamy does not necessarily occur. For the phenomenon of *enantiostylis* (right- and left-styled fls.) see Cassia. Some have fls. which after fertilisation bury themselves in the earth and there ripen their fruit; *e.g.* Arachis, Lathyrus, Trifolium, Vicia, Voandzeia, &c.

Fr. typically a *legume*, or pod opening by both sutures. In some the pod is constricted between the seeds, forming a *lomentum* which breaks up into indeh. one-seeded portions. The pods frequently open explosively, the valves twisting up spirally, *e.g.* in Ulex, Cytisus sp.,

&c. In Colutea, &c. they are inflated. Some are eaten by animals, but the seed-coats are hard enough to preserve the seeds from injury. Some have a coloured fleshy aril (*Acacia* sp., &c.). Still others have hooked pods, e.g. *Medicago*, *Mimosa*. The seed is exalb.; usu. large store of reserves in the cot.

Economically the L. are most important. The seeds of many sp. form important food-stuffs, e.g. of *Arachis* (see Edible Products for common names), *Cajanus*, *Cicer*, *Dolichos*, *Glycine*, *Lathyrus*, *Lens*, *Lotus*, *Lupinus*, *Phaseolus*, *Pisum*, *Vicia*, *Voandzeia*, &c. The pods of *Ceratonia*, *Tamarindus*, *Phaseolus*, *Prosopis*, &c. are also eaten. A great number are valuable as fodder, and known as artificial grasses, e.g. *Trifolium*, *Medicago*, *Onobrychis*, *Lotus*, *Vicia*, &c. Many trop. and subtrop. sp. yield valuable timber, e.g. *Acacia*, *Albizzia*, *Dalbergia*, *Gleditschia*, *Hymenaea*, *Melanoxylon*, *Pericopsis*, *Pterocarpus*, *Robinia*, *Sophora*, &c.; *Crotalaria* and others are sources of fibre; *Acacia*, *Genista*, *Haematoxylon*, *Indigofera*, &c. yield dyes; gums and resins are obtained from *Acacia*, *Astragalus*, *Copaifera*, *Hymenaea*, &c.; oil is expressed from the seeds of *Arachis* and *Voandzeia*; kino is obtained from *Pterocarpus*, and so on. See Economic Products and genera.

Classification and chief genera (after Taubert): the L. are nearly related to *Rosaceae* (especially *Chrysobalanaceae*) and *Connaraceae*. Warming erects L. into a separate order, and considers each of the three chief divisions as an independent fam.

The primary division is;

- I. *MIMOSOIDEAE*. Fls. regular, corolla valvate.
- II. *CAESALPINIOIDEAE*. Zygomorphic; corolla-aestivation imbricate ascending.
- III. *PAPILIONATAE*. Zygomorphic papilionaceous; corolla-aestivation imbricate descending.

These are again subdivided: the following key enables one to ascertain to which of the subdivisions any Leguminous plant belongs.

I. *MIMOSOIDEAE*.

A. Calyx valvate.

a. Sta. more than 10.

1. *Ingeae* (sta. united): *Inga*, *Calliandra*, *Pithecolobium*, *Albizzia*.

2. *Acacieae* (sta. free): *Acacia* (only gen.).

b. Sta. as many or twice as many as petals.

3. *Eumimoseae* (anther glandless): *Mimosa*.
4. *Adenanthoreae* (anther in bud crowned by a gland; endosperm): *Neptunia*, *Prosopis*.
5. *Piptadenieae* (ditto, no endosperm): *Piptadenia*, *Entada*.

B. Calyx imbricate.

6. *Parkieae*: *Parkia*.

II. *CAESALPINIOIDEAE*.

A. Calyx in bud quite undivided or tubular below.

- a. Leaves simple or one pair of leaflets. Sta. 10 or fewer.

4. *Bauhinieae*: *Bauhinia*, *Cercis*.

- b. Leaves once pinnate (exceptions). Sta. ∞ or rarely 9—13.

- 9. *Swartzieae* (*Tounateae*): *Swartzia*.
- c. Leaves bipinnate, or once pinnate; sta. 5.
 - 1. *Dimorphandreae*: *Dimorphandra*.
- B. Calyx in bud quite polysepalous or very nearly so.
 - a. Two anterior petals modified to large glands, anthers opening by pores.
 - 6. *Kramerieae*: *Krameria* (only gen.).
 - b. Two anterior petals developed or not, but not glandular.
 - a. Leaves some or all bipinnate.
 - 7. *Euaesalpinieae*: *Caesalpinia*, *Haematoxylon*, *Gleditschia*, *Poinciana*.
 - β. Leaves once pinnate.
 - 5. *Cassieae* (anthers basifixed, opening by terminal pores): *Cassia*, *Ceratonia*.
 - 3. *Amherstieae* (dorsifixed, no pores; ovary adnate behind to torus): *Hymenaea*, *Tamarindus*.
 - 8. *Sclerolobieae* (ovary free, ovules > 3): *Sclerolobium*.
 - 2. *Cynometreae* (ovules 1 or 2): *Copaiba*.

III. *PAPILIONATAE*.

- A. Sta. free.
 - 1. *Sophoreae* (pinnate leafr): *Sophora*, *Myroxyton*.
 - 2. *Podalyrieae* (simple or palmate): *Anagyris*.
- B. Sta. united.
 - a. Lomentum.
 - 7. *Hedysareae*: *Coronilla*, *Onobrychis*, *Arachis*, *Desmodium*.
 - b. Legume or indehiscent pod.
 - a. Leaves absent.
 - 6. *Galegeae*: *Robinia*, *Colutea*, *Indigofera*, *Tephrosia*, *Astragalus*, *Oxytropis*. (Cf. below.)
 - β. Leaves present.
 - I. *Leaf or leaflets without stipels*.
 - (1) Lf. simple or palmate.
 - * Lf. with 3 entire leaflets.
 - 3. *Genisteae*: (shrubs) *Genista*, *Lupinus*, *Ulex*, *Cytisus*, *Crotalaria*.
 - 6. *Galegeae*: (herbs) as above.
 - ** Lf. with 5 entire leaflets.
 - 5. *Loteae*: *Anthyllis*, *Lotus*.
 - *** Lf. with 3 toothed leaflets.
 - 4. *Trifolieae*: *Ononis*, *Medicago*, *Trifolium*.
 - (2) Leaf pinnate.
 - * Leaf-stalk ending in bristle or tendril.
 - 9. *Vicieae*: *Abrus*, *Vicia*, *Lathyrus*, *Pisum*.
 - ** Leaf-stalk not ending so.
 - † Pod dehiscing in 2 valves.
 - § Sta. filamentous.
 - 10. *Phaseoleae*: (ovary surrounded by disc) *Apios*, *Phaseolus*.
 - 6. *Galegeae*: (no disc) as before.
 - §§ Some or all sta. broadened at apex.
 - 5. *Loteae*: as before.
 - †† Pod indehiscent.

8. *Dalbergieae*: *Dalbergia*, *Pterocarpus*.
 II. *Leaves or leaflets with stipels*.
 10. *Phaseoleae*: (pod dehiscent) as before.
 8. *Dalbergieae*: (pod indehiscent) as before.

- Lehmanniella** Gilg. *Gentianaceae* (I). 2 Colombia.
Leianthus Griseb. (*Lisianthus EP.*). *Gentianaceae* (I). 10 W.I., C. Am.
Leibergia Coulter et Rose. *Umbelliferae* (III. 5). 1 Idaho.
Leiboldia Schlecht. (*Vernonia p.p.*). *Compositae* (I). 4 N. Am.
Leichhardtia F. Muell. *Menispermaceae*. 1 N.E. Austr.
Leichtlinia H. Ross (*Agave p.p. EP.*). *Amaryllidaceae* (II). 1 Mexico.
Leidesia Muell.-Arg. in DC. *Euphorbiaceae* (A. II. 2). 2 Cape Colony.
Leighia Cass. = *Viguiera* H.B. et K. (Comp.).
Leimanthium Willd. = *Melanthium* L. (Lili.).
Leiocarpodicraea Engl. (*Dicraea p.p.*). *Podostemaceae*. 3 trop. Afr.
Leiochilus Hook. (*Buseria EP.*). *Rubiaceae* (II. 4). 1 Madag.
Leioclusia Baill. *Guttiferae* (inc. sed.). 1 Madag.
Leiogyne K. Schum. (*Neves-Armondia EP.*). *Bignoniaceae* (I). 1 E. Brazil.
Leiophaca Lindau. *Acanthaceae* (IV. A). 1 trop. Afr.
Leiophyllum Hedw. f. *Ericaceae* (I. 3). 1 Atl. U.S.
Leioptyx Pierre ex De Wild. *Meliaceae*. 1 trop. Afr.
Leistostemon Rafin. (*Pentstemon p.p.*). *Scrophular.* (II. 4). 2 N.W. N. Am.
Leiothrix Ruhland (*Paepalanthus p.p.*). *Eriocaulonaceae*. 30 S. Am.
Leiothylax Wmg. (*Dicraea p.p.*). *Podostemaceae*. 3 trop. Afr.
Leiphaimos Cham. et Schlecht. (*Voyria BH.*). *Gentianaceae* (I). 20 trop. Am. and Afr., W.I.
Leitgebia Eichl. *Ochnaceae*. 1 Brit. Guiana.
Leitneria Chapm. *Leitneriaceae*. 2 N. Am. Shrubs with spikes of dioecious fls. ♂ naked with 3—12 sta. ♀ with scaly P, 1 cpl. and long style. $\bar{G}$ 1-loc., with 1 amphitr. ov. Fr. drupaceous. Seed albuminous. Embryo straight.
Leitneriaceae (*EP., BH.*). Dicots. (Archichl. *Leitneriales*; *Unisexuales BH.*). Only genus *Leitneria*, *q.v.*
Leitneriales. The 7th order of Dicots. Archichlamydeae.
Leitnerieae (*BH.*) = *Leitneriaceae*.
Lemairea de Vriese. *Goodeniaceae* (inc. sed.). 1 Amboina.
Lemaireocereus Britton et Rose (*Cereus p.p.*). *Cactaceae* (III. I). 13 trop. and subtrop. Am.
Lembertia Green (*Eatonella p.p.*). *Compositae* (6). 1 California.
Lemmonia A. Gray. *Hydrophyllaceae*. 1 California.
Lemna L. *Lemnaceae*. 6 cosmop.; 4 in Brit. (duckweed). The plant consists in most, *e.g.* *L. minor* L., of a flat green floating blade, the stem, which performs leaf-functions. From the under side hangs down a long adv. root, with well-marked root-cap, visible to the eye. No l. The stems are oval and slightly turned up at the ends, so that if two are placed near together in water, they will run against one another and adhere by the tips. In the post. portion on either side is a groove under the edge. In this arise branches which may either (as in *L. trisulca* L., &c.) remain in union with the parent shoot, or become detached and give rise to new plants. In autumn a number

of these are formed ready to start growth in the next spring, whilst the mother plants sink to the bottom. The fls. are also borne in these grooves. There is a very reduced spathe, with 2 ♂ fls. (each reduced to 1 sta.) and 1 ♀ (1 cpl.).

Lemnaceae (EP., BH.). Monocotyledons (Spathiflorae; Nudiflorae BH.). 3 gen., 18 sp. of free-swimming perennial water-pl. with no l. The description of *Lemna* applies to the others also. Fls. unisexual, monoec.; ♂ of 1 sta., ♀ of 1 cpl., with 1—6 basal, erect, ortho- to ana-tr. ovules. The micropylar end of the inner integument forms a kind of lid upon the seed. Endosperm slight. Often regarded as very reduced Araceae. *Genera*: *Spirodela*, *Lemna*, *Wolffia*.

Lemnopsis Zipp. Podostemaceae (inc. sed.). 3 Malaya.

Lemon, *Citrus Medica* L., var. *Limonium*; - **grass**, *Cymbopogon citratus* Stapf; - **tree**, **bastard** (W.I.), *Fagara*; **water** -, *Passiflora laurifolia* L.

Lemurorchis Krzl. Orchidaceae (II. 17). 1 Madag.

Lencymmaea C. Presl. Inc. sed. 1 Burma.

Lennea Klotzsch. Leguminosae (III. 6). 2 Mexico, C. Am.

Lennea Lex. Lennoaceae. 3 Centr. Mexico.

Lennoaceae (EP., BH.). Dicotyledons (Sympet. Ericales). 3 gen., 5 sp. S. California, Mexico. Herbs parasitic by their roots on roots of Clematis, &c. Fl. ♀, reg., 5—∞-merous, with sta. in one whorl epipet. at base of tube, anthers with slits; $\bar{G}$ (6—14) each with false septum and 2 ovules. Drupe with 12—28 stones. Endosp. *Genera*: *Pholisma*, *Ammobroma*, *Lennea*.

Lenophyllum Rose. Crassulaceae. 5 Mexico, Texas.

Lens (Tourn.) L. Leguminosae (III. 9). 6 Medit., W. As. *L. esculenta* Moench (*Ervum Lens* L.) is the lentil, a food-plant of great antiquity. The seeds furnish a flour.

Lentibulariaceae (EP., BH.). Dicotyledons (Sympet. Tubiflorae; Personales BH.). 5 gen., 250 sp. cosmop. All are insectivorous plants and show many interesting features in their veg. organs; for details see genera. Infl. usu. a raceme or spike; fls. sol. in Pinguicula, &c. Fl. ♀, ♂, 5-merous. K 2—5-lobed, the odd sepal posterior, often 2-lipped, persistent on the fr.; C (5), 2-lipped, the lower lip ± spurred; A 2 (the anterior pair), epipet., with 1-loc. anthers; $\bar{G}$ (2) 1-loc. with free-central placenta and sessile 2-lobed stigma (the posterior lobe abortive); ovules ∞ or 2, anatr., often ± sunk in the placenta. Capsule with ∞ seeds, opening by 2—4 valves, or with 1 seed indehiscent. Seed exalb. *Genera*: *Pinguicula*, *Genlisea*, *Polypompholyx*, *Utricularia*, *Biovularia*. Cf. Insectivorous plants.

Lenticel, a breathing pore in the bark, *Sambucus*.

Lenticular, lens-shaped.

Lentiginose, minutely dotted.

Lentil, *Lens esculenta* Moench.

Lentiscus (Tourn.). L. = *Pistacia* L. (Anacard.).

Lenzia Phil. Amarantaceae (inc. sed.) (sometimes Portulacaceae). 1 Chili.

Leochilus Knowles et Westc. (*Oncidium* p.p. EP.). Orchidaceae (II. 19). 7 Mexico to Peru, W.I.

Leocus A. Chevalier. Labiatae (VII). 1 trop. Afr.

- Leonia** Ruiz et Pav. Violaceae. 2 Amazon valley. Placed by Martius in Myrsinaceae, by Meisner in a fam. Leoniaceae.
- Leonotis** R. Br. in Ait. Labiatae (vi). 15 trop. and S. Afr.
- Leontice** L. Berberidaceae. 12 N. temp. Stem base tuberous.
- Leontochir** Phil. Amaryllid. (iii). 1 Chili. Plac. parietal.
- Leontodon** L. (incl. *Thrincia* Roth). Compositae (13). 45 temp., Eur., As.; 3 in Brit. (hawkbit). Very like *Taraxacum*. In *L. hirtus* L. the outer frs. have no pappus.
- Leontonyx** Cass. Compositae (4). 5 S.W. Afr.
- Leontopodium** R. Br. Compositae (4). 6 Mts. of Eur., As. and S. Am. *L. alpinum* Cass. (Edelweiss) is a xero. growing in dense tufts, and covered with woolly hairs. The central florets are ♂, the style remaining, however, to act as pollen-presenter, though it has no stigmas. The outer florets are ♀.
- Leonurus** L. Labiatae (vi). 8 Eur., As., and trop. *L. Cardiac* L. in Brit. (mother-wort).
- Leopard's bane**, *Doronicum*; - wood, *Brosimum Aubletii* Poepp.
- Leopoldia** Parl. = *Muscari* Mill. p.p. (Lili.).
- Leopoldinia** Mart. Palmae (iv. i). 4 trop. Brazil. *L. Piassaba* Wallace yields the best Piassaba fibre (Wallace, *Amazon*, ch. ix).
- Lepachys** Rafin. (*Rudbeckia* L. p.p. *EP.*). Compositae (5). 4 N. Am. Cult. orn. fl.
- Lepadanthus** Ridl. Gesneriaceae (i). 1 Malay Peninsula.
- Lepanthes** Sw. Orchidaceae (ii. 8). 50 trop. Am., W.I.
- Lepargyrea** Rafin. (*Shepherdia* *EP.*, *Elaeagnus* *BH.*). Elaeag. 3 N. Am.
- Lepechinia** Willd. Labiatae (vi). 4 Mexico.
- Lepervenchea** Cordemoy (*Angraecum* p.p.). Orchid. (ii. 20). 1 Bourbon.
- Lepidacanthus** C. Presl. Acanthaceae (iv. B). 2 Brazil.
- Lepidadenia** Nees = *Litsea* Lam. (Laur.).
- Lepidagathis** Willd. Acanthaceae (iv. A). 60 trop.
- Lepidaglaia** Pierre (*Aglai*a p.p.). Meliaceae (ii). 4 S.E. As.
- Lepidella** Van Tiegh. (*Lepidaria* p.p.). Lorantheae. 4 Malay Arch.
- Lepiderema** Radlk. Sapindaceae (i). 1 New Guinea.
- Lepidesmia** Klatt. Compositae (2). 1 Cuba.
- Lepidium** L. Cruciferae (2). 100 cosmop. 5 Brit. (cress). *L. Sativum* L. (Orient) is the garden cress.
- Lepidobolus** Nees. Restionaceae. 3 S. Austr.
- Lepidobotrys** Engl. Linaceae. 1 trop. Afr.
- Lepidocaryum** Mart. Palmae (iii). 5 N.W. Brazil.
- Lepidoceras** Hook. f. Lorantheae (ii). 1 Peru to Chiloe.
- Lepidocroton** Klotzsch. Menispermaceae (inc. sed.). 1 Guiana.
- Lepidogyne** Blume. Orchidaceae (ii. 2). 1 Java.
- Lepidolopha** C. Winkler. Compositae (7). 1 Turkestan.
- Lepidopetalum** Blume (*Ratonia* p.p. *BH.*). Sapind. (i). 6 Malaya.
- Lepidophyllum** Cass. Compositae (3). 8 southern Andes.
- Lepidopironia** A. Rich. (*Tetrapogon* *EP.*). Gramineae (ii). 1 Abyssinia.
- Lepidoptera**, butterflies and moths; cf. Butterfly Flowers, &c.
- Lepidospartum** A. Gray. Compositae (8). 3 S.W. U.S.

- Lepidosperma** Labill. Cyperaceae (11). 40 Austr., N.Z., trop. As.
L. gladiatum Labill. is the sword-sedge, used to bind sand-dunes in Austr., and as a material for paper-making.
- Lepidospora** F. Muell. (*Schoenus* p.p. *EP.*). Cyperaceae (11). 1 Austr.
- Lepidostemon** Hook. f. et Thoms. Cruciferae (4). 1 E. Himalaya.
- Lepidostephium** Oliv. Compositae (7). 1 S. Afr.
- Lepidote**, with small scurfy scales.
- Lepidotrichum** Velen. et Bornm. Cruciferae (4). 1 Bulgaria.
- Lepidoturus** Baill. Euphorbiaceae (A. 11. 2). 4 trop. Afr., Madag.
- Lepigonum** Wahlb. = *Spergularia* J. et C. Presl (Caryoph.).
- Lepilaena** J. Drum. et Harv. (*Althenia* *EP.*). Potamogeton. 3 Austr.
- Lepinia** Decne. Apocynaceae (1. 2). 2 Tahiti, Solomon Is.
- Lepiniopsis** Valetton. Apocynaceae (1. 2). 1 Ternate.
- Lepionurus** Blume. Opiliaceae. 2 E. Indomal.
- Lepipogon** Bertol. f. Rubiaceae (inc. sed.). 1 E. Afr.
- Lepironia** Rich. Cyperaceae (11). 1 Madag., trop. As., Austr., Polynes., *L. mucronata* Rich., cult. in China. The stems are beaten flat and woven into mats, sails (for junks), &c.
- Lepisanthes** Blume. Sapindaceae (1). 20 trop. As.
- Lepismium** Pfeiff. = *Rhipsalis* Gaertn. (Cact.).
- Lepistemon** Blume. Convolvulaceae (1). 5 Indomal.
- Lepistemonopsis** Dammer. Convolvulaceae (1). 1 Kilimandjaro.
- Leptactinia** Hook. f. Rubiaceae (1. 8). 8 trop. and S. Afr.
- Leptadenia** R. Br. Asclepiadaceae (11. 3). 15 trop. Afr., As.
- Leptaleum** DC. Cruciferae (4). 2 E. Medit., W. As.
- Leptalix** Rafn. = *Fraxinus* Tourn. (Oleac.).
- Leptandra** Nutt. = *Veronica* Tourn. (Scroph.).
- Leptarrhena** R. Br. Saxifragaceae (1). 1 Kamtschatka, Rocky Mts.
- Leptasea** Haw. (*Saxifraga* p.p.). Saxifragaceae (1). 12 N. temp.
- Leptaspis** R. Br. Gramineae (6). 3 palaeotrop.
- Leptaulus** Benth. Icacinaceae. 3 W. and C. trop. Afr.
- LeptERICA** N.E. Br. Ericaceae (IV. 2). 1 S. Afr.
- Leptilon** Rafn. = *Erigeron* L. (Comp.).
- Leptinella** Cass. = *Cotula* Tourn. p.p. (Comp.).
- Leptis** E. Mey. ex Eckl. et Zeyh. = *Lotononis* Eckl. et Zeyh. p.p.
- Leptobaea** Benth. Gesneriaceae (1). 2 N. Bengal.
- Leptocarpha** DC. Compositae (5). 1 Chili.
- Leptocarpus** R. Br. Restionaceae. 25 S.E. As., Austr., Chili, S. Afr.
- Leptocarydium** Hochst. (*Triodia* Bll., *Diplachne* p.p. *EP.*). Gramineae (10). 1 S. Afr.
- Leptocereus** Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 1 Cuba.
- Leptochilus** Kaulf. Polypodiaceae. 65 trop. and sub trop.
- Leptochlaena** Spreng. (*Leptolaena* Thou.). Chlaenaceae. 6 Madag.
- Leptochloa** Beauv. Gramineae (11). 15 trop. and sub trop.
- Leptoclinium** Benth. Compositae (2). 1 Goyaz, Brazil.
- Leptocodon** Lem. Campanulaceae (1). 1 Himalaya. Pedicel of lat. fl. conerescent with axis of infl.
- Leptocyamus** Benth. = *Glycine* L. p.p. (Legum.).
- Leptodactylon** Hook. et Arn. (*Gilia* p.p.). Polemoniaceae. 6 N. Am.
- Leptodermis** Wall. Rubiaceae (11. 6). 7 Himalaya to Japan.
- Leptoderris** Dunn (*Derris* p.p.). Leguminosae (III. 8). 14 trop. Afr.

- Leptodesmia** Benth. Leguminosae (III. 7). 2 Madag., India.
Leptoglossis Benth. (*Salpiglossis* p.p. *EP.*). Solan. (5). 4 temp. S. Am.
Leptogonum Benth. Polygonaceae (III. 2). 1 S. Domingo.
Leptogramma J. Sm. = *Dryopteris* Adans. (Polypod.).
Leptolaelia × Mast. Orchid hybrid, *Leptotes* and *Laelia*.
Leptolaena Thou. Chlaenaceae. 6 Madagascar.
Leptolepia Mett. Polypodiaceae. 2 Austr., New Zealand.
Leptolepis Boeck. Cyperaceae (II). 1 Tibet.
Leptolobium Vog. = *Sweetia* Spreng. p.p. (Legum.).
Leptoloma Chase. Gramineae (5). 5 Austr.
Leptomeria R. Br. Santalaceae. 15 Austr.
Leptomischus Drake del Castillo. Rubiaceae (I. 2). 1 Tonquin.
Leptonema A. Juss. Euphorbiaceae (A. I. 1). 1 Madag.
Leptonychia Turcz. Sterculiaceae. 8 trop. Afr. and As.
Leptopharynx Rydberg (*Periyle* p.p.). Compositae (6). 12 N. Am.
Leptophoenix Becc. (*Nenga* p.p. *EP.*). Palmaceae (IV. 1). 3 New Guinea.
Leptophragma R. Br. Meliaceae (inc. sed.). 1 Austr.
Leptopoda Nutt. = *Helenium* L. p.p. (Comp.).
Leptopteris Presl. Osmundaceae. 7 New Guinea, Polynesia, N.Z.
Leptopyrum Reichb. (*Isopyrum* *BH.*). Ranunculaceae (2). 1 C. As.
Leptorhabdos Schrenk. Scrophulariaceae (III. 2). 4 C. and S. As.
Leptorhoeo C. B. Clarke. Commelinaceae. 1 Mexico to Brazil.
Leptorhynchus Less. Compositae (4). 8 temp. Austr.
Leptoscela Hook. f. Rubiaceae (I. 2). 1 E. Brazil.
Leptosiphonium F. Muell. (*Ruellia* p.p. *EP.*). Acanthaceae (IV. A). 1 New Guinea.
Leptosolena Presl (*Alpinia* p.p. *EP.*). Zingiberaceae (I). 1 Phil. Is.
Leptospermum Forst. Myrtaceae (II. 1). 25 Malaya, Austr., N.Z.
Leptosporangiatæ (Filicales). See Filicales *Leptosporangiatæ*.
Leptostachya Nees = *Justicia* L. p.p. (Acanth.).
Leptostylis Benth. Sapotaceae (I). 2 New Caledonia.
Leptosyne DC. (*Coreopsis* p.p. *EP.*). Compositae (5). 5 Calif., Mexico.
Leptotaenia Nutt. (*Ferula* p.p. *BH.*). Umbelliferae (III. 6). 12 N. Am.
Leptotes Lindl. (*Tetramicra* p.p. *BH.*). Orchid. (II. 6). 1 Brazil. Cult.
Leptothrium Kunth. Gramineae (3). 1 warm Am.
Leptothyrsa Hook. f. Rutaceae (I). 1 Amazon valley.
Leptovignea Börner = *Carex* p.p. (Cyper.).
Lepturella Stapf. Gramineae (12). 1 French Soudan.
Lepturopsis Steud. (*Rhytachne* p.p. *EP.*). Gramineae (2). 1 Guinea.
Lepturus R. Br. Gramineae (12). 4 trop. and subtrop. |*.
Lepuropetalon Ell. Saxifragaceae (I). 1 S. U.S., Chili.
Lepyrodia R. Br. Restionaceae. 15 Austr., New Zealand.
Lepyrodiclis Fenzl (*Arenaria* p.p. *BH.*). Caryophyll. (I. 1). 5 W. As.
Lerchea L. Rubiaceae (I. 2). 2 Malay Archipelago.
Leretia Vell. (*Mappia* p.p. *BH.*). Icacinaceae. 3 trop. Brazil.

- Leria** DC. = *Chaptalia* Vent. (Comp.).
- Lescaillea** Griseb. Compositae (6). 1 Cuba.
- Leschenaultia** R. Br. Goodeniaceae. 16 Austr. "In *L. formosa* R. Br., the insect's proboscis comes in contact with the lower lip of the pollen-cup (see fam.), opening it and dusting itself with pollen; in the next fl. it places this pollen on the stigmatic surface which lies outside the pollen-cup." (Müller.)
- Lespedeza** Michx. Leguminosae (III. 7). 40 temp. N. Am., As., and Mts. of trop. As., Austr. Fls. sometimes apetalous, and cleistogamic. *L. striata* Hook. et Arn. (Japanese clover; As.) is being spread over N. Am. by animal agency. It is a useful fodder-plant.
- Lesquerella** Wats. (*Vesicaria* p.p. BH.). Cruciferae (3). 50 Am.
- Lessertia** DC. Leguminosae (III. 6). 40 Afr.
- Lessingia** Cham. Compositae (3). 15 California.
- Lestibudesia** Thou. = *Celosia* L. p.p. (Amarant.).
- Leto** Phil. (*Brachyandra* EP.). Compositae (2). 1 Chili.
- Lettsomia** Roxb. Convolvulaceae (1). 20 warm As.
- Lettuce**, *Lactuca sativa* L.; **lamb's -**, *Valerianella*; **prickly -**, *Lactuca Scariola* L.; **- tree**, *Pisonia morindifolia* Br.; **water -**, *Pistia Stratiotes* L.
- Leuc-**, **leuco-** (Gr. pref.), white; **-anthous**, white flowered, &c.
- Leucactinia** Rydberg (*Pectis* p.p.). Compositae (6). 1 Mexico.
- Leucadendron** Berg. Proteaceae (1). 70 S. Afr. *L. argenteum* R. Br. (silver-tree) has l. covered with fine silky hairs, and may be used for painting upon. It has been nearly extirpated. Fl. like Protea. The P, when the fr. is ripe, splits into 4 segments, united round the stigma, and acts as a wing.
- Leucadendron** L. = *Protea* L. (Prot.).
- Leucaena** Benth. Leguminosae (I. 3). 12 warm Am., Polynesia.
- Leucampyx** A. Gray ex Benth. et Hook. f. Compos. (7). 1 S.W. U.S.
- Leucanthemum** (Tourn.) L. = *Chrysanthemum* Tourn. p.p. (Comp.).
- Leucas** Burm. Labiatae (VI). 70 trop., Afr., As.
- Leucaster** Choisy. Nyctaginaceae. 1 Brazil.
- Leucelene** Greene (*Aster* p.p.). Compositae (3). 6 N. Am.
- Leuceres** Calest. (*Endressia* p.p.). Umbelliferae (III. 5). 2 Spain.
- Leuceria** Lag. Compositae (12). 50 S. Am. Xerophytes.
- Leuchtenbergia** (Fisch.) Hook. Cactaceae (III. 1). 1 Mexico. See fam.
- Leucobarleria** Lindau. Acanthaceae (IV. B). 3 N.E. Afr., Arabia.
- Leucocalantha** Barb. Rodr. Bignoniaceae (inc. sed.). 1 Amazonas.
- Leucocarpus** D. Don. Scrophulariaceae (II. 4). 1 trop. Am.
- Leucocodon** Gardn. Rubiaceae (I. 7). 1 Ceylon.
- Leucocoma** Nieuwland (*Thalictrum* p.p.). Ranunculaceae (3). 1 N. Am.
- Leucocoryne** Lindl. Liliaceae (IV). 8 Chili. Cult. orn. fl.
- Leucocrinum** Nutt. ex A. Gray. Liliaceae (III). 1 W. U.S.
- Leucocroton** Griseb. Euphorbiaceae (A. II. 2). 4 Cuba.
- Leucogenes** Beauverd. Compositae (4). 2 New Zealand.
- Leucojum** L. Amaryllidaceae (1). 10 S. Eur. (snow-flake).
- Leucolaena** R. Br. = *Xanthosia* Rudge p.p. (Umbell.).

- Leucolena** Ridley. Orchidaceae (II. 5). 1 Malay Peninsula.
Leucomeris D. Don. Compositae (12). 2 Nepal, Burma.
Leucomphalos Benth. Leguminosae (III. 1). 1 W. trop. Afr.
Leuconotis Jack. Apocynaceae (I. 1). 10 Malaya.
Leucopholis Gardn. Compositae (4). 3 S. Brazil.
Leucophrys Rendle (*Panicum* p.p.). Gramineae (5). 1 trop. Afr.
Leucophyllum Humb. et Bonpl. Scrophulariaceae (I. 1). 3 Texas, Mexico.
Leucopitys Nieuwland (*Pinus* p.p.). Coniferae (Pinaceae). 2 N. temp.
Leucopogon R. Br. (*Styphelia* Sol.). Epacridaceae (3). 130 Austr., Malaya.
Leucopsis Baker (*Aster* p.p. *EP.*). Compositae (3). 10 trop. Am.
Leucorchis Blume (*Didymoplexis* *BH.*). Orchidaceae (II. 2). 3 Indomal.
Leucosalpa Scott Elliot. Scrophulariaceae (III. 2). 1 Madag.
Leucosceptrum Sm. Labiatae (1). 2 Himalaya, China.
Leucosidea Eckl. et Zeyh. Rosaceae (III. 5). 1 S. Afr.
Leucosmia Benth. Thymelaeaceae. 4 Fiji.
Leucospermum R. Br. Proteaceae (1). 30 S. Afr.
Leucosphaera Gilg. Amarantaceae (2). 2 S.W. Afr.
Leucostegane Prain. Leguminosae (II. 3). 1 Indomal.
Leucostegia Presl = *Davallia* Sm. (Polypod.).
Leucosyke Zoll. et Morr. Urticaceae (3). 10 Malaya, Polynesia.
Leucosyris Greene (*Aster* p.p.). Compositae (3). 2 N. Am.
Leucothoë D. Don. Ericaceae (II. 1). 35 Am. Like *Andromeda*.
Leunisia Phil. Compositae (12). 1 Chili.
Leurocline Sp. Moore. Boraginaceae (IV. 5). 2 trop. Afr.
Leuzea DC. (*Centaurea* p.p. *EP.*). Compositae (11). 3 Medit.
Levenhookia R. Br. Stylidiaceae. 7 Austr. The labellum is shoe-shaped and at first embraces the column, but if touched it springs downwards.
Lever-wood, *Ostrya*.
Levieria Becc. Monimiaceae. 4 New Guinea, Queensland.
Levigatus (Lat.), smooth, slippery.
Levisticum Riv. ex L. Umbelliferae (III. 6). 2 Eur., W. As.
Levyia Bur. ex Baill. Bignoniaceae (1). 1 Nicaragua.
Lewisia Pursh. Portulacaceae. 2 California. *L. rediviva* Pursh (bitter-root) with thick rhiz., fleshy roots and l., is very xero. Two years' drying will hardly kill it. K 4—8, C 8—16; A ∞.
Leycesteria Wall. Caprifoliaceae. 3 Himalaya, China.
Leyssera L. Compositae (4). 5 S. Afr., Medit.
Lhotzkyia Schau. Myrtaceae (II. 2). 10 Austr.
Liabum Adans. Compositae (8). 60 Am. and W. Ind.
Liane, a woody climber, *Ancistrocladus*, *Apocynaceae*, *Aristolochiaceae*, *Asclepiadaceae*, *Bignoniaceae*, *Hippocrateaceae*, *Landolphia*, *Leguminosae*, *Malpighiaceae*, &c. Cf. Climbing Plants.
Liatris Schreb. Compositae (2). 15 N. Am.
Libanotis Riv. ex Hall. = *Seseli* L. (*BH.*) = *Athamanta* L.
Liber, phloem.
Liberian coffee, *Coffea liberica* Hiern.

- Libertia** Spreng. Iridaceae (II). 8 Chili, Austr., N.Z. Cult. orn. fl.
- Libocedrus** Endl. Coniferae (Pinac. 37; see C. for gen. char.). 8, 2 in Chili, 2 in N.Z., 1 each in New Caled., Japan, China, Calif. *L. Doniana* Endl. (N. Z.), *L. tetragona* Endl. (Chili) and *L. decurrens* Torr. (Calif., white cedar) yield valuable timber.
- Licania** Aubl. Rosaceae (VI). 45 S. Am.
- Lichtensteinia** Cham. et Schlecht. Umbelliferae (III. 5). 5 S. Afr.
- Licuala** Thunb. Palmae (I. 2). 40 Indomal.
- Lidbeckia** Berg. Compositae (7). 3 S.W. Cape Colony.
- Liebrechtsia** Wildem. (*Vigna* p.p. *EP.*). Legumin. (III. 10). 6 trop. Afr.
- Lietzia** Regel. Gesneriaceae (II). 1 Brazil.
- Lifago** Schweinf. et Muschler. Compositae (4). 1 Algeria.
- Life-history**, the course of development and metamorphosis.
- Ligea** Poit. ex Tul. Podostemaceae. 5 Brazil, Guiana.
- Ligeria** Decne. = *Sinningia* Nees p.p. (Gesn.).
- Light**, effects of, see Physiological textbooks.
- Lightfootia** L'Herit. Campanulaceae (I). 45 Afr.
- Lightia** Schomb. Trigonaceae. 2 Guiana, Amazon valley.
- Lign-aloës**, eagle-wood, *Aquilaria Agallocha* Roxb. (Burma).
- Ligneus** (Lat.), woody; **-ification**, becoming woody.
- Lignum vitae**, *Guaiacum officinale* L.
- Ligularia** Cass. (*Senecio* p.p. *BH.*). Compositae (8). 35 Eur., As.
- Ligulate** (C), strap-shaped, *Compositae*.
- Ligule**, a scale at upper end of leaf-sheath, *Gramineae*.
- Liguliflorate**, with ligulate flowers.
- Ligusticella** Coulter et Rose (*Ligusticum* p.p.). Umbelliferae (III. 5). 1 Colorado.
- Ligusticum** L. Umbelliferae (III. 5). 55 N. Hemisph., Chili, N.Z. *L. scoticum* L. (lovage) in Brit.; it is sometimes used as a pot-herb.
- Ligustrum** (Tourn.) L. Oleaceae. 35, esp. E. As. *L. vulgare* L. (privet) in Brit.
- Lijndenia** Zoll. et Morr. (*Memecylon* p.p. *BH.*). Melastom. (III). 1 Java.
- Lilac**, *Syringa vulgaris* L.; **Californian** -, *Ceanothus*; **Indian** -, *Melia Lagerstroemia*; **West Indian** -, *Melia*.
- Lilaea** Humb. et Bonpl. Scheuchzeriaceae (Naiad. *BH.*). 1 Rockies, Andes.
- Liliaceae** (*EP.*, *BH.*). Monocots. (Liliiflorae; Coronarieae *BH.*). One of the largest fams. of flowering plants; 200 gen., 2700 sp., cosmop.; the smaller groups often confined to definite floral regions. Most are herbs with sympodial rhiz. or bulbs; a few trop. and warm temp. forms, e.g. *Yucca*, *Dracaena*, &c., are shrubs or trees, often with an unusual mode of growth in thickness. Many are xero.; some, e.g. *Aloe* and *Gasteria*, are succulent; others, e.g. *Phormium*, have hard isobil. l.; others, e.g. *Dasyllirion*, have tuberous stems and narrow l.; *Bowiea* only produces leafy shoots in the wet season. *Smilax*, *Gloriosa*, &c., are climbing pl., the former with peculiar stipular tendrils. *Ruscus* exhibits phylloclades.
- Inf. most commonly racemose; fls. with no bracteoles; when the latter occur, the further branching from their axils usually takes a

cymose form, especially that of a bostryx, as in *Hemerocallis*. The apparent umbels or heads of *Allium*, *Agapanthus*, &c. are really cymose. Sol. term. fls. occur in tulip, &c. Fls. usu. ♂, reg., pentacyclic, 3-merous (rarely 2, 4, or 5), hypog. P 3+3, free or united, petaloid or sometimes sepaloid; A 3+3 or fewer, rarely more, usually with introrse anthers; G (3) usu. sup., rarely inf. or semi-inf., 3-loc. with axile, or rarely 1-loc. with parietal plac.; ovules usu. ∞, in two rows in each loc., anatropous. Fr. usu. capsular, loculic. or septic., sometimes a berry. Seed with straight or curved embryo, in abundant fleshy or cartilaginous, never floury, endosp.

Fls. usu. insect-pollinated. Honey in *Scilla*, *Allium*, &c., is secreted by glands in the ovary-wall between the cpls.; in other cases by glands on the bases of the perianth-l. (see Müller's *Fert. of Fls.*). *Yucca* (*q.v.*) has a unique pollination-method.

Economically the L. are of no great value. The chief food plants are *Allium* and *Asparagus*; *Phormium*, *Yucca*, and *Sansevieria* yield useful fibre; *Smilax*, *Urginea*, *Aloe*, *Colchicum*, *Veratrum*, &c., are medicinal. *Xanthorrhoea* and *Dracaena* yield resins; *Chlorogalum* is used as soap. Many are favourite garden and greenhouse plants, e.g. *Convallaria*, *Tulipa*, *Fritillaria*, *Lilium*, *Agapanthus*, *Kniphofia*, *Funkia*, *Hyacinthus*, *Gloriosa*, and many more.

Classification and chief genera (after Engler): the L. are closely allied to Juncaceae; usu. they can be distinguished by their petaloid P, but many L. have a sepaloid P, e.g. *Xanthorrhoea*, *Kingia*, &c., and in these cases almost the only distinction is the absence in L. of the long thread-like twisted stigmas of J. *BH.* unite these genera, and some others, to Juncaceae, and place sub-fams. VIII and IX in Haemodoraceae. Warming splits up the family into Colchicaceae, Liliaceae, and Convallariaceae.

I. *MELANTHIOIDEAE* (rhiz., or bulb covered with scale-l. and with term. infl.; anthers extr. or intr.; caps. loculic. or septic.; fr. never a berry): *Tofieldia*, *Narthecium*, *Veratrum*, *Gloriosa*, *Colchicum*.

II. *HERRERIOIDEAE* (tuber, with climbing stem; l. in tufts; small-flowered racemes at base of these or in panicles at ends of twigs; septic. caps.): *Herreria* (only genus).

III. *ASPHODELOIDEAE* (rhiz. with radical l., rarely stem with crown of l. or leafy branched stem or bulb; infl. usu. term., a simple or cpd. raceme or spike; P or (P); anthers intr.; caps., rarely berry): *Asphodelus*, *Chlorogalum*, *Bowiea*, *Funkia*, *Hemerocallis*, *Phormium*, *Kniphofia*, *Aloe*, *Gasteria*, *Haworthia*, *Aphyllanthes*, *Lomandra*, *Xanthorrhoea*, *Kingia*.



Diagram of *Convallaria*
(after Eichler).

IV. *ALLIOIDEAE* (bulb or short rhiz.; cymose umbel $\pm$ enclosed by two broad or rarely narrow l., sometimes joined; infl. rarely of 1 fl.): *Agapanthus*, *Gagea*, *Allium*, *Brodiaea*.

V. *LILIOIDEAE* (bulb; infl. term., racemose; P or (P); anthers intr.; caps. loculic., except in *Calochortus*): *Lilium*, *Fritillaria*, *Tulipa*, *Scilla*, *Ornithogalum*, *Hyacinthus*, *Muscari*.

VI. *DRACAENOIDEAE* (stem erect with leafy crown, except in *Astelia*; l. sometimes leathery, never fleshy; P free or united at base; anthers intr.; berry or caps.): *Yucca*, *Dasyliiron*, *Dracaena*.

VII. *ASPARAGOIDEAE* (rhiz. subterranean, sympodial; berry): *Asparagus*, *Ruscus*, *Polygonatum*, *Convallaria*, *Trillium*.

VIII. *OPHIPOGONOIDEAE* (short rhiz., sometimes with suckers, with narrow or lanceolate radical l.; P or (P); anthers intr. or semi-intr.; ovary sup. or $\frac{1}{2}$ -inf.; fr. with thin pericarp and 1—3 seeds with fleshy coats): *Sansevieria*, *Ophiopogon*.

IX. *ALETROIDEAE* (short rhiz. with narrow or lanceolate radical l.; (P); anthers semi-intr.; caps. loculic.; seeds ∞ , with thin testa): *Alettris* (only genus).

X. *LUZURIAGOIDEAE* (shrubs or undershrubs with erect or climbing twigs; infl.-twigs usu. many-flowered, cymose, rarely 1-flowered, with scaly bract at base; both whorls of P alike or not; berry with spherical seeds): *Luzuriaga*, *Lapageria*.

XI. *SMILACOIDEAE* (climbing shrubs with net-veined l.; fls. small in axillary umbels or racemes or term. panicles; loc. with 1 or 2 orthotr. or semi-anatr. ovules): *Smilax*.

Liliago (Caesalp.) L. = *Anthericum* L. (Lili.).

Liliiflorae. The 9th order of Monocotyledons.

Lilium Tourn. ex Linn. Liliaceae (v). 50 N. temp. Herbs with scaly bulbs, leafy stems and fls. in racemes. Honey secreted in long grooves at the bases of the P-leaves. The fls. of many sp. are visited by Lepidoptera. *L. Martagon* L. gives off its scent at night (cf. *Oenothera*). *L. bulbiferum* L. is reproduced veg. by bulbils in the leaf-axils. In most sp. with hanging fls. the caps. when ripe stands upwards, so that the seeds can only escape when it is shaken. Many sp. of lily cult. orn. fl.

Lilloa Speg. (*Synandropadix* EP.). Araceae (vii). 1 Argentina.

Lily, *Lilium*, used of most Liliaceae, Amaryllidaceae, &c.; **arum** -, *Richardia africana* Kunth; **Bourbon** -, *Lilium candidum* L.; **Chinese sacred** -, *Narcissus*; **Jacobean** -, *Sprekelia formosissima* Herb.; **Kaffir** -, *Clivia*; - **of the valley**, *Convallaria majalis* L.; **queen** -, *Phaedranassa*; **spire** -, *Galtonia*; **swamp** -, *Zephyranthes*; - **thorn** (W.I.), *Catesbaea*; **water** -, *Nuphar*, *Nymphaea*.

Lima bean, *Phaseolus lunatus* L.

Limacia Lour. Menispermaceae. 20 trop. As. and Afr.

Limaciopsis Engl. Menispermaceae. 1 trop. Afr.

Limatodes Lindl. (*Phajus* p.p. BH.). Orchidaceae (ii. 9). 1 Burma.

Crossed by *Preptanthe vestita* is the *Calanthe Veitchii* Hort.

Limb, the free portion of a concrescent corolla; one branch of a sym-podium.

Lime, *Citrus Medica* L., var. *acidu*, var. *Limetta*, *Tilia*; - **myrtle** (W.I.), *Triphasia*.

- Limeum** L. Phytolaccaceae (Aizoaceae BH.). 15 S. Afr. to India.
Limit of trees, either N. or S., or upwards in the Mts., beyond which they do not naturally occur.
- Limivasculum** Börner = *Carex* p.p. (Cyper.).
- Limnanthaceae** (EP.; *Geraniaceae* p.p. BH.). Dicot. (Archichl. Sapindales). A very small fam. (2 gen., 5 sp., N. Am.) sometimes united to *Geraniaceae*, but with the ovules as in ord. Sapindales. Herbs with exstip. alt. l. and reg. ♂ fls., 3—5-merous, with two whorls of sta. Ovary 3—5-loc., ovules 1 in each loc., ascending, the micropyle facing outwards and downwards. Fruit a schizocarp. Seeds exalbuminous. *Genera*: *Limnanthes*, *Floerkea*.
- Limnanthemum** S. P. Gmel. *Gentianaceae* (II). 20 trop. and temp. *L. (Villarsia) nymphaeoides* Hoffmgg. et Link, S. England, is a water-plant with habit of *Nymphaea*. The infl. appears to spring from the top of the leaf-stalk, but really the floating l. springs from the infl. axis. This is an advance upon the *Nymphaea* construction, as the materials going from l. to seeds have not to travel to the bottom of the pond and up again.
- Limnanthes** R. Br. *Limnanthaceae*. 4 Pacific N. Am.
- Limnas** Trin. *Gramineae* (8) 1 E. Siberia.
- Limnia** L. (*Claytonia* Gronov.). *Portulacaceae*. 10 N. Am.
- Limnium** (Cl.), a lake formation.
- Limnobium** Rich. (*Hydromystris* G. F. W. Mey., *Trianea* Karst.). *Hydrocharitaceae*. 3 Am. *L. (H.) stoloniferum* Griseb. (*T. bogotensis* Karst.), a small floating plant often cult. It reproduces veg. by 'runners' (cf. *Hydrocharis*). Its root-hairs are used to show circulation of protoplasm. Only the ♀ pl. is known in Eur.
- Limnocharis** Humb. et Bonpl. *Butomaceae*. 2 trop. S. Am., W.I.
- Limnochloa** Beauv. ex Lestib. = *Eleocharis* R. Br. (Cyper.).
- Limnodium** (Cl.), a salt marsh formation.
- Limnophila** R. Br. (*Ambulia* Lam. EP.). *Scrophular.* (II. 6). 30 palaeotrop.
- Limnophyton** Miq. *Alismaceae*. 2 palaeotrop.
- Limnorchis** Rydberg (*Habenaria* p.p.). *Orchid.* (II. 1). 24 N. Am., Eur.
- Limnosipanea** Hook. f. *Rubiaceae* (I. 3). 4 S. and C. Am.
- Limodorum** (Tourn.) L. *Orchidaceae* (II. 2). 1 S. Eur. A leafless saprophyte with no chlorophyll (cf. *Epipogum*). The 4 lat. sta. are sometimes fertile.
- Limonia** L. *Rutaceae* (v). 10 trop. Afr. and As. Some have thorns in the leaf-axils (l. of branch, as in *Cactaceae*). The fr. of *L. acidissima* L. is used in Japan as a substitute for soap.
- Limoniastrum** Moench. *Plumbaginaceae*. 3 Medit.
- Limonium** Tourn. ex Mill. = *Statice* L. (*Plumbag.*).
- Limosella** L. *Scrophulariaceae* (II. 6). 7 cosmop. *L. aquatica* L., mud-wort, in Brit. multiplies by runners.
- Linaceae** (EP.; BII. add *Erythroxylaceae*). Dicot. (Archichl. Geraniales). 9 gen., 150 sp., cosmop. Most are herbs and shrubs with alt. entire often stip. l. Infl. cymose, a dichasium or cincinnus, the latter usu. straightening out very much and looking like a raceme. Fl. ♂, reg., usu. 5-merous. K 5, quincuncial; C 5, imbr. or conv.;

A 5, 10 or more, often with stds., united at base into a ring; $\underline{G}$ (2—3—5), multi-loc., often with extra partitions projecting from the mid-ribs of the cpls., but not united to the axile plac.; ovules 1 or 2 per loc., pend., anat., with the micropyle facing outwards and upwards. Septic. caps., or drupe. Embryo usu. straight, in fleshy endosp. Linum (flax, linseed) is economically important. *Chief genera*: Radiola, Linum, Hugonia. [BH. chars. incl. ov. 1-loc.]

Linaloa, *Eursera delpechiana* Poiss. (Mexico).

Linanthus Benth. (*Gilia* p.p.). Polemoniaceae. 15 N. Am.

Linaria Tourn. ex Mill. (BH. incl. *Cymbalaria* Medic., *Elatine* Rupp., *Elatinoides* Wettst.). Scrophulariaceae (II. 3). 100 * and S. Am., chiefly extra-trop. 7 in Brit. (toad-flax), esp. *L. vulgaris* Mill. (yellow toad-flax). The pl. is a perennial, each year's growth arising from an adv. bud upon the summit of the root. The fl. is closed at the mouth; honey is secreted by the nectary at the base of the ovary and collects in the spur. The only visitors are the larger bees, which are able to open the fl., and whose tongues are long enough to reach the honey. Peloria of the fl. is frequent; a term. fl. appears upon the raceme and is symmetrical, with 5 spurs upon the C and a tubular mouth. Sometimes fls. of this type occur all down the raceme. Another interesting sp. is *L. Cymbalaria* Mill., the ivy-leaved toad-flax, found on walls in Brit. Before fert. the fls. are positively heliotropic and stand erect; after it they become negatively heliotropic and bend downwards, seeking out the dark crannies in the substratum, where the seeds ripen.

Linariopsis Welw. Pedaliaceae. 1 trop. S.W. Afr.

Linconia L. Bruniaceae. 3 S. Afr.

Lindackeria Presl = *Oncoba* Forsk. (Flacourt.).

Lindauea Rendle. Acanthaceae (IV. B). 1 Somaliland.

Lindelofia Lehm. Boraginaceae (IV. 1). 2 W. Himal.

Linden, *Tilia*.

Lindenbergia Lehm. Scrophulariaceae (II. 6). 12 trop. As. and Afr.

Lindenia Benth. Rubiaceae (I. 3). 3 C. Am., Fiji, New Caledonia.

Lindera Thunb. Lauraceae (II). 70 sp. Japan to Java. *L. Benzoin* Meissn. has aromatic bark (antifebrile).

Lindernia All. (*Vandellia* L. BH.). Scrophular. (II. 6). 30 warm.

Lindheimera A. Gray et Engelm. Compositae (5). 1 Texas.

Lindleya H. B. et K. Rosaceae (I. 2). 1 Mexico.

Lindleyella Rydberg (*Lindleya* H. B. et K.). Rosaceae (I. 2). 2 N. Am.

Lindleyella Schlechter. Orchidaceae (II. 12). 1 W.I., Guiana.

Lindmania Mez. (*Cottendorfia* p.p.). Bromeliaceae (2). 5 S. Am.

Lindsaya Dryand. Polypodiaceae. 90 trop. and sub trop., exc. Afr.

Lineae (BH.) = Linaceae.

Linear (l.), long and narrow, as in grasses.

Lineate (dimin. lineolate), marked with (fine) lines.

Ling, *Calluna vulgaris* Salisb.

Lingelsheimia Pax. Euphorbiaceae (A. I. 1). 2 C. Afr.

Linnaea Gronov. in L. (incl. *Abelia* R. Br.). Caprifoliaceae (III). 20 *, *L. borealis* L. in Scotland. Ovary covered with glandular hairs. Sta. 4, didynamous. Two loculi are ∞ -ovulate and sterile, the other 1-ovulate and fertile. Some (*Abelia*) cult. orn. fl.; ed. fr.

Linnaeopsis Engl. Gesneriaceae (I). 1 trop. Afr.

Linnaeus' system, the artificial system, by which plants were divided into classes, &c. on purely artificial lines, by the number of stamens and cpls., &c.; - **species**, cf. Nomenclature.

Linocalyx Lindau. Acanthaceae (IV. B). 1 trop. Afr.

Linochilus Benth. = *Diplostephium* H. B. et K. (Comp.).

Linociera Sw. (*Mayepa* Aubl. EP.). Oleaceae. 50 trop., sub trop.

Linodendron Griseb. (*Lasiadenia* BH.). Thymelaeaceae. 4 Cuba.

Linospadix Becc. Palmaceae (IV. I). 8 New Guinea, Austr.

Linostoma Wall. Thymelaeaceae. 2 Further India.

Linosyris Cass. = *Aster* Tourn. p.p.; **do.** Torr. et Gray = *Bigelovia* DC.

Linseed, **Lint**, *Linum usitatissimum* L.

Lintonia Stapf. Gramineae (9). 1 Brit. E. Afr.

Linum Tourn. ex L. Linaceae. 95 temp. and sub trop., esp. Medit. 4 in Brit., *L. catharticum* L. (purging flax), common, *L. usitatissimum* L. (common flax or linseed), an introduction, cult. in Ireland and elsewhere. Fls. in sympodial cincinni. Several are heterostyled (dimorphic), e.g. the common red one of gardens, *L. grandiflorum* Desf. Illegitimate pollination in this sp. produces absolutely no seed at all. The seed has a mucilaginous testa which swells on wetting. Flax is the fibre of *Linum usitatissimum* L., obtained by rotting off the softer tissues in water; linen is made from it. The shorter fibres form tow, and scraped linen lint. The seeds (linseed) yield an oil by pressure, and the remaining 'cake' (cf. Gossypium) is used for cattle-feeding, &c.

Lip, a projecting anterior part of an irregular corolla or calyx.

Liparia L. Leguminosae (III. 3). 4 S. Afr.

Liparis Rich. (BH. incl. *Cestichis* Thou.). Orchidaceae (II. 4). 100 trop. and temp. (1 in Brit., rare).

Liparophyllum Hook. f. Gentianaceae (II). 1 Tasm., New Zealand.

Lip-fern (Am.), *Cheilanthes*.

Lipocarpha R. Br. in Tuckey. Cyperaceae (I). 7 trop.

Lipochaeta DC. Compositae (5). 12 Hawaiian and Galapagos Is.

Lipostoma D. Don (*Coccocypselum* BH.). Rubiaceae (I. 2). 2 Brazil.

Lipozygis E. Mey. = *Lotononis* Eckl. et Zeyh. p.p. (Legum.).

Lippia Houst. ex L. Verbenaceae (I). 120 trop. Am., Afr. The l. of *L. citriodora* H. B. et K. yield an aromatic oil used in perfumery under the name Verbena-oil. Some have axillary thorns.

Liquidambar L. Hamamelidaceae 4 Medit., As., N. Am. Fls. monoec., apert., the ♂ in upright spikes, the ♀ in heads on pend. stalks. The seeds are easily shaken out in strong winds. Storax (a fragrant balsam) is obtained from all, but chiefly from *L. orientalis* Mill. (As. min.). *L. styraciflua* L., sweet gum, N. Am.; wood useful (satin walnut).

Liquorice, *Glycyrrhiza glabra* L.; **Indian -**, - **vine** (W.I.), *Abrus*.

Lirayea Pierre (*Afromendonia* EP.). Acanthaceae (II). 1 trop. Afr.

Liriodendron L. Magnoliaceae. 1 N. Am., *L. tulipifera* L., the tulip-tree, often cult. in parks. The l. is polymorphic. Fr. a samara; the aggregate of samaras upon the recept. looks like a pine-cone. The wood is useful (canary whitewood).

Liriope Lour. Liliaceae (VIII) (Haemodor. BH.). 2 E. As.

- Liriosma** Poepp. et Endl. Olacaceae. 15 trop. S. Am.
Lisaea Boiss. (*Caucalis* p.p. *BH.*). Umbelliferae (III. 2). 3 W. As.
Lisianthus L. Gentianaceae (I). 15 W.I., Cent. Am.
Lissanthe R. Br. (*Styphelia* p.p. *EP.*). Epacridaceae (3). 4 Austr.
Lissocarpa Benth. Styracaceae. 1 Brazil.
Lissochilus R. Br. Orchidaceae (II. 10). 50 trop. Afr.
Listera R. Br. Orchidaceae (II. 2). 20 N. temp. *L. ovata* R. Br. (tway-blade) and *L. cordata* R. Br. in Brit. The labellum is bent downwards and forked into two. The rostellum on being touched ruptures violently and ejects a viscid fluid which cements the pollinia to the insect as in *Epipactis* (see Darwin, *Orchids*, p. 115).
Listia E. Mey. Leguminosae (III. 3). 1 S. Afr.
Listrostachys Reichb. f. (*Angraecum* p.p. *BH.*). Orchidaceae (II. 20). 50 trop. Afr.
Litanthus Harv. Liliaceae (v). 1 S. Afr.
Litanum Nieuwland (*Talinum* p.p.). Portulacaceae. 1 N. Am.
Litchi Sonner. (*Nephelium* p.p. *BH.*). Sapindaceae (I). 1 China, *L. chinensis* Sonner. (litchi or leechie), cult. for ed. fr., a one-seeded nut with fleshy aril.

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Numerous more special works are mentioned under different heads throughout the book.

Lithobium Bong. Melastomaceae (I). 1 Minas Geraes.

Lithocardium L. = *Cordia* L. (Borag.).

Lithophragma Torr. et Gray (*Tellima* R. Br. p.p.). Saxifragaceae (I). 15 N. Am.

Lithophytum T. S. Brandege. Solanaceae? 1 California.

Lithospermum (Tourn.) L. Boraginaceae (IV. 4). 50 temp.; 3 in Brit. (gromwell).

Lithraea Miers. Anacardiaceae (3). 3 S. Am.

Litobrochia Presl = *Pteris* L.

Litosanthes Blume. Rubiaceae (II. 5). 3 Malay Archipelago.

Litsea Lam. Lauraceae (II). 150 trop. As., Austr. L. and bark medicinal.

Littledalea Hemsl. Gramineae (10). 1 Tibet.

Littonia Hook. Liliaceae (I). 4 S. and trop. Afr. Like *Gloriosa*.

Littoralis (Lat.), growing on the beach.

Littorella Berg. Plantaginaceae. 2 sp., 1 in S. Am., and *L. lacustris* L. (shore-weed) in Eur. (incl. Brit.). This pl. exhibits two forms, one in water, another on land. The land form has a rosette of narrow l. about 3 cm. long, which spread out upon the ground and show distinct dorsiventral structure. Fls. in groups of 3, one ♂ on a long stalk between two sessile ♀, which are ripe before the sta. emerge from the former. Both sta. and style are very long and the fls. are wind-pollinated. Fr. a nut. The water form has much larger l. which grow erect and are cylindrical (centric) in form and internal structure; no fls. are produced, but the plant multiplies largely by runners. It is often mistaken for *Isoetes*.

Live-long, *Sedum*.

Liveus (Lat.), pale lead colour.

Livistona R. Br. Palmae (I. 2). 20 Indomal., Austr. Tall trees with fan leaves and panicles of ♂ fls. Fr. a berry.

Lizard's tail (Am.), *Saururus*.

Llagunoa Ruiz et Pav. Sapindaceae (II). 2 Andes.

Llanosia Blanco (*Ternstroemia* p.p.). Theaceae. 1 Phil. Is.

Llavea Lagasca. Polypodiaceae. 1 trop. Am.

Llavea Liebm. Inc. sed. 2 Mexico.

Lloydia Salisb. Liliaceae (v). 5 N. temp.; 1 on Snowdon.

Loasa Adans. Loasaceae. 100 Mexico and S. Am., chiefly Mts. of Chili and Peru. Several cult. orn. fl.; they possess stinging hairs. The fls. are generally yellow and face downwards. The nectaries, formed of combined stds. (see fam.), are large and conspicuous. The petals are boat-shaped and conceal the groups of sta.

Loasaceae (EP., BH.). Dicotyledons (Archichl. Parietales; Passiflorales BH.). 13 gen., 120 sp. Andine plants, many cult. orn. fl.

Mostly herbs, frequently twining, with opp. or alt., rarely stip., l. The epidermis bears hairs of various kinds; esp. common are grapple-hairs and stinging-hairs. Fls. usu. in cymes, often sympodial, yellow (rarely white or red), ♀, usu. 5-merous. Receptacle deeply hollowed out, so that the fl. is epig. K 5, imbr.; C 5, free or united; A 5—∞. In the genera with ∞ sta. there is much difference as to the arrangement. In *Mentzelia* they are evenly distributed round the style, the outermost in some sp. being sterile. In other gen. it is the antesealous sta. that are sterile, and in some, e.g. *Loasa*, *Blumenbachia*, 3 or more of the stds. are united to form a large coloured nectary, whose mouth is towards the centre of the fl. and partly obstructed by the other stds. $\bar{G}$ 1 or more commonly (3—5), with parietal plac.; ovules 1, several, or ∞, anat., with one integument; style simple. Fr. various, often a caps., sometimes spirally twisted. Endosp. or not. *Chief genera*: *Gronovia*, *Mentzelia*, *Loasa*, *Blumenbachia*.

Loaseae (BH.) = Loasaceae.

Lobe (l.), portion of a divided (not cpd.) l. or stigma.

Lobelia Plum. ex L. Campanulaceae (III). 220 trop. and temp.; 2 in Brit., one in lakes (*L. Dortmanna* L.); several cult. orn. fl. The fl. (see fam.) is twisted upon its axis through 180°, and is ♂. The anthers are syngenesious as in Compositae, and the style pushes through the tube thus formed, driving the pollen out at the top. Finally it emerges, the stigmas separate, and the ♀ stage begins. [See fam. and cf. *Campanula*, *Phyteuma*, *Jasione* and Compositae.]

Loblolly bay, *Gordonia Lasianthus* L.; - **pine**, *Pinus Taeda* L.; - **sweetwood** (W.I.), *Sciadophyllum*; - **tree** (W.I.), *Cupania*, *Pisonia*.

Lobogyne Schlechter. Orchidaceae (II. a. III). 2 New Guinea, Polynesia.

Lobostemon Lehm. Boraginaceae (IV. 5). 50 S. Afr.

Lobostephanus N.E. Br. (*Emicocarpus* p.p. EP.). Asclepiadaceae (II. i). 1 S. Afr.

Lobularia Desv. (*Alyssum* p.p. BH.). Cruciferae (4). 4 Medit.

Locellate, divided into small compartments.

Lochia Balf. f. Caryophyllaceae (I. 4). 1 Socotra.

Lochmium (Cl.), a thicket formation.

Lochnera Reichb. (*Vinca* p.p. BH.). Apocynaceae (I. 3). 3 trop. *L. rosea* Reichb., one of the commonest trop. weeds.

Lockhartia Hook. Orchidaceae (II. 19). 20 trop. Am., W.I. No tubers; l. crowded together.

Loculament, **loculus**, a cavity in the ovary, usu. containing ovules; **loculicidal** (fr.), splitting down midrib of each cpl.

Locust, **honey -**, *Gleditschia*; - **tree**, *Robinia Pseudacacia* L. (W.I.), *Byrsonima*, *Hymenaea*.

Loddigesia Sims. Leguminosae (III. 3). 1 S. Afr.

Lodh bark, *Symplocos racemosa* Roxb. (India).

Lodhra Guill. = *Symplocos* Jacq. p.p. (Symploc.).

Lodicularia Beauv. = *Hemarthria* R. Br. (BH.) = *Rottboellia* L. f.

Lodicule, *Gramineae*.

Lodoicea Comm. Palmae (II). 1 Seychelles, *L. Sechellarum* Labill., the double coco-nut or Coco de iner. Dioec. The fr. is one of the largest known and takes 10 years to ripen. The nut is bilobed. The

fr. used to be found floating in the Indian Ocean long before the tree was discovered (see *Treas. of Bot.*).

Loeflingia L. Caryophyllaceae (I. 3). 5 Medit., C. As., N. Am.

Loeselia L. Polemoniaceae. 18 Am.

Loesenera Harms. Leguminosae (II. 3). 1 trop. Afr.

Loewia Urb. Turneraceae. 2 trop. Afr.

Loganberry, a supposed blackberry-raspberry hybrid, but cf. *Journ. of Heredity*, Nov. 1906, p. 504.

Logania R. Br. Loganiaceae. 21 Austr., N.Z.

Loganiaceae (EP., BH.). Dicots. (Sympet. Contortae; Gentianales BH.). 32 gen., 350 sp., trop.; a few warm temp. (Am., As., N.Z., but none in Eur.). Trees, shrubs, and herbs with opp. stip. l.; stips. often very much reduced. Many climbing plants, esp. *Strychnos*. Infl. as a rule cymose, various; the fls. with bracts and bracteoles, usu. reg., ♀, and 4—5-merous, with occasional increase in number in C and A. Disc small or absent. K (4—5), imbr.; C (4—5), valv., imbr., or conv.; A 4—5, rarely 1, epipet.; $\bar{G}$ (2), anteropost., 2-loc., or rarely imperfectly so, or 1- or more-loc.; style simple; ovules usu. ∞ , amphi- or ana-tr. Caps., berry, or drupe. Endosp. Nearly allied to Apocynaceae, Gentianaceae, Solanaceae, Scrophulariaceae and Rubiaceae. See discussion in *Nat. Pfl. Chief genera*: *Logania*, *Spigelia*, *Strychnos*, *Fagraea*, *Buddleia*, *Desfontainea*.

Logwood, **Campeachy** -, *Haematoxylon campechianum* L., *Ceanothus Chloroxylon* Nees; **bastard** - (W.I.), *Acacia Berteriana* Spreng.

Loheria Merrill. Myrsinaceae (II). 1 Phil. Is.

Loiseleuria Desv. Ericaceae (I. 3). 1 north circumpolar, *L. procumbens* Desv. (*Azalea procumbens* L.), the trailing *Azalea*. Highlands of Scotland. The l. are very wiry, and rolled back at the margins, thus reducing transpiration. Fls. reg., protogynous; they come out shortly after the melting of the snow.

Lolium L. Gramineae (12). 6 Eur., N. Afr., temp. As. *L. perenne* L. in Brit. (rye-grass). Spikelets in a 2-ranked spike, and placed edgewise (this distinguishes the subtribe *Lolieae* from the *Leptureae*, to which *Triticum* and *Hordeum* belong). The rye-grasses are valuable pasture and fodder.

Lomandra Labill. (*Xerotes* R. Br. BH.). Liliaceae (III) (*Juncaceae* BH.). 30 Austr. Dioecious.

Lomaria Willd. = *Blechnum* L. (Polypod.).

Lomatia R. Br. Proteaceae (II). 9 E. Austr., Tasm., Chili.

Lomatium Rafin. (*Peucedanum* p.p. BH.). Umbellif. (III. 6). 60 W. N. Am.

Lomatophyllum Willd. Liliaceae (III). 3 Masc. Cult. orn. fl.

Lomatozona Baker. Compositae (2). 1 Goyaz.

Lombardy poplar, *Populus nigra* L., var. *pyramidalis* Spach.

Lomentose, like a lomentum, *Raphanus*; **lomentum**, a pod constricted between the seeds, breaking into 1-seeded portions, *Leguminosae*.

Lommelia Jumelle et Perrier. Palmaceae (IV. 1). 1 Madag.

Lonas Adans. Compositae (7). 1 S.W. Medit.

Lonchitis L. Polypodiaceae. 8 trop. Am. and Afr., Madag.

Lonchocarpus H. B. et K. Leguminosae (III. 8). 75 trop. Am., Afr., Austr.

Lonchomera Hook. f. et Thoms. (*Mezzettia* p.p.). Anonaceae (1).

1 Malay Peninsula.

Lonchophora Dur. Cruciferae (4). 1 N. Afr.

Lonchostephus Tul. Podostemaceae. 1 Amazon.

Lonchostoma Wikstr. Bruniaceae. 3 S. Afr.

London pride, *Saxifraga umbrosa* L.

Long and short shoots, *Berberis*, *Coniferae*, *Ginkgo*, *Phyllocladus*, *Pinus*.

Longan, *Nephelium Longana* Cambess.

Longetia Baill. Euphorbiaceae (A. I. 1). 2 New Caled.

Longi- (Lat. pref.), long.

Long-moss, *Tillandsia*.

Long-tongued insects, bees and Hymenoptera.

Lonicera L. Caprifoliaceae. 100 *. *L. Periclymenum* L. (honey-suckle or woodbine), and others, in Brit. Mostly erect shrubs, a few twining, with opp. frequently connate l. In the axils of many (e.g. *L. tatarica* L.) are serial buds, of which the lowest gives rise to the fls. usu. in pairs, the central fl. of the small dichasium not being developed. The fl. is frequently $\perp$, and gives rise to a berry. In some the pair of fls. produces two independent berries, in others the berries fuse into one as they form. Some sp. exhibit the 'fusion' even earlier; and one finds two corollas seated upon what at first glance appears a single inf. ovary. Dissection shows that in most cases the two ovaries are side by side, free from one another, in a common hollow axis; in a few cases, however, the union is more complete. The fl. of the honeysuckle is visited chiefly by hawk-moths (at night). The fl. opens in the evening, the anthers having dehiscent shortly before this. The style projects beyond the anthers. The fl. moves into a horiz. position at the same time. At first the style is bent downwards and the sta. form the alighting place for insects. Later on the style moves up to a horiz. position, the sta. shrivel and bend down, and this is complete by the second evening when the next crop of buds is opening. At the same time the fl. has changed from white to yellow. The length of the tube keeps out all but very long-tongued insects (class F).

Loofah, *Luffa cylindrica* M. Roem.

Looking glass tree, *Heritiera littoralis* Ait.

Loose pollen mechanism, cf. *Acanthus*, and *Bartsia*, *Borago*, *Calluna*, *Cyclamen*, *Erica*, *Ericaceae*, *Euphrasia*, *Galanthus*, *Melampyrum*, *Pedicularis*, *Scrophulariaceae*, *Solanum*.

Loosestrife, purple, *Lythrum*, yellow, *Lysimachia*.

Lopezia Cav. Onagraceae (2). 15 C. Am. Fl. $\perp$. The two upper petals are bent upwards a little way from the base, and at the bend there seems to be a drop of honey. In reality this is a dry glossy piece of hard tissue; like the similar bodies in *Parnassia* it deceives flies. There are real nectaries at the base of the fl. There are two sta., of which the post. only is fertile; it is enclosed at first in the ant. one, which is a spoon-shaped petaloid std. In the early stage of the fl., the style is undeveloped and insects alight on the sta.; later the style grows out into the place first occupied by the sta., which now bends upwards out of the way. In *L. coronata* Andr., &c. there

is an upward tension in the sta., a downward in the std., and an explosion occurs when an insect alights. Cult. orn. fl.

Lophacme Stapf. Gramineae (11). 1 S. Afr.

Lophactis Rafin. Compositae (inc. sed.). 1 N. Am.

Lophanthera A. Juss. Malpighiaceae (11). 1 N. trop. S. Am.

Lophanthus Benth. Labiatae (VI). 2 C. As., China. Fl. stalk sometimes resupinate like that of *Lobelia*.

Lophatherum Brongn. Gramineae (10). 4 E. As.

Lophiocarpus Miq. (*Sagittaria* p.p. *BH.*). Alismaceae. 4 trop.

Lophiocarpus Turcz. Chenopodiaceae (inc. sed.). 2 S. Afr.

Lophiola Ker-Gawl. Amaryllidaceae (III). 1 Atl. N. Am.

Lophira Banks ex Gaertn. f. Ochnaceae. 2 trop. Afr. The fr. of *L. alata* Banks (African oak) has one sep. much, a second less, elongated.

The seeds yield an oil on pressure; timber good.

Lophium (Cl.), a hill formation.

Lophocarpus Boeck. Cyperaceae (II). 1 Tonquin.

Lophocereus Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 3 S.W. U.S.

Lophogyne Tul. Podostemaceae. 2 Rio de Janeiro.

Lopholaena DC. Compositae (8). 4 S. and trop. Afr.

Lopholepis Decne. Gramineae (3). 1 India.

Lophopappus Rusby. Compositae (12). 1 Bolivia.

Lophopetalum Wight ex Arn. Celastraceae. 12 Indomal.

Lophophora Coult. (*Anhalonium* p.p.). Cactaceae (III. 2). 1 N. Am.

Lophophyllum Griff. (*Peramphora* p.p. *EP.*). Menisperm. 1 Indomal.

Lophophytum Schott et Endl. Balanophoraceae. 4 trop. S. Am.

Lophopogon Hack. Gramineae (2). 2 Indomal.

Lophopterys A. Juss. Malpighiaceae (1). 1 Guiana.

Lophopyxis Hook. f. Icacinaceae (formerly Euph.). 3 Malaya.

Lophoschoenus Stapf (*Cyclocampe* p.p.). Cyper. (II). 3 Seychelles, Borneo, New Caledonia.

Lophosciadium DC. Umbelliferae (III. 6). 5 S. Eur., W. As.

Lophospermum D. Don = *Maurandia* Orteg. p.p. (Scroph.).

Lophostachys Pohl. Acanthaceae (IV. A). 12 Brazil, Peru.

Lophostigma Radlk. Sapindaceae (1). 1 Bolivia.

Lophostoma Meissn. (*Linostoma* *BH.*). Thymelaeaceae. 3 Amazonas.

Lophotocarpus Durand (*Lophiocarpus* p.p.). Alismaceae. 2 trop.

Lopriorea Schinz. (*Psilotrichum* p.p.). Amarantaceae (2). 1 E. Afr.

Lopseed (Am.), *Phryma*.

Loquat, *Eriobotrya japonica* Lindl.

Loranthaceae (*EP.*, *BH.*). Dicots. (Archichl. Santalales; Achlamydo-sporae *BH.*). 21 gen., 520 sp., trop. and temp. The only genus in Brit. is *Viscum*, the mistletoe. An interesting fam. of parasites with green l. Mostly small semi-parasitic shrubs attached to their hosts by suckers or haustoria—usu. regarded as modified adv. roots. A few root in the earth, e.g. the W. Austr. *Nuytsia*, which grows into a small tree 30 feet high. Most are fairly omnivorous in their choice of hosts, but a few are restricted to one or two. Where the parasitic root joins the host, there is not uncommonly an outgrowth, often of considerable size and complicated in shape. The parasitic root often branches within the tissue of the host, as in mistletoe. The stem is

sympodial, often dichasial, *e.g.* in *Viscum*, and the l. usu. evergr. and leathery.

Infl. cymose, the fls. usu. in little groups of 3 (or 2, by abortion of the central fl.). When the fls. are stalked, the bracts of the lateral fls. are always united to their stalks, up to the point of origin of the fl. (see *Viscum* and *Loranthus*). Infl. sometimes in spikes, with the fls. on the internodes as well as on the nodes.

The recept. is hollowed out, and the P springs from its margin. In the *Loranthoideae* there is below the P an outgrowth of the axis in the form of a small fringe—the *calyculus*. Some look upon it as a K, many as an outgrowth of the axis; and this is perhaps the safest view. P either sepaloid or petaloid. Fls. ♀ or unisexual. Sta. as many as, and (as in *Proteaceae*) united with, the P-leaves. The pollen is often developed in a great number of loculi, separate from one another, though often becoming continuous when mature. Ovary 1-loc., sunk in, and united with, the receptacle, the ovules not differentiated from the placenta. Embryo-sacs > one, curiously lengthened (*cf.* *Casuarina*). Fr. a pseudo-berry or -drupe, the fleshy part really the receptacle. Round the seed is a layer of viscin, a very sticky substance. [For full details of the many interesting features of this fam., the infl., fl., pollen, development and structure of ovule and embryo-sac, fruit, seed, germination, haustoria, &c., see Engler in *Nat. Pfl.* and papers by Wiesner in *Sitz. k. Akad. Wien*, CIII. 1894, and Keeble in *Trans. Linn. Soc.* v. 1896.]

Classification and chief genera (after Engler):

- I. *LORANTHOIDEAE* (with calyculus): *Struthanthus*, *Loranthus*, *Psittacanthus*.
- II. *VISCOIDEAE* (without calyc.): *Arceuthobium*, *Viscum*.

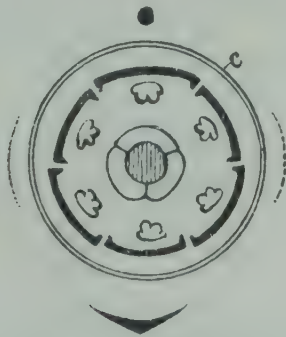


Diagram of *Loranthus* (after Eichler). *c*, calyculus.

Loranthus L. *Loranthaceae* (1). 300 | * trop. and sub trop. Semi-parasites. ♀ or unisexual fls. in small cymes, the bracts adnate to the peduncles. Fr. like that of *Viscum*. See *Nat. Pfl.*, Eichler's *Blüthendiag.* and papers by Wiesner and Keeble (*cf.* fam.).

Lorate, loriform, strap-shaped.

Lords and ladies, *Arum maculatum* L.

Lorentea Lag. = *Pectis* L. p.p. (Comp.).

Lorentzia Griseb. (*Pascalina* BH., *Wedelia* p.p. EP.). *Compositae* (5).

1 S. temp. Am.

Lorentzia Hieron. (*Ayenia* Loeffl.). *Sterculiaceae*. 2 Argentina.

- Loreya** DC. Melastomaceae (1). 8 S. Am.
- Loropetalum** R. Br. Hamamelidaceae. 1 Khasias, S. China.
- Lorostelma** Fourn. Asclepiadaceae (11. 3). 1 Brazil.
- Lortia** Rendle. Euphorbiaceae (A. 1. 8). 2 trop. Afr.
- Lote fruit**, *Zizyphus Lotus* Lam. (Medit.).
- Lotononis** Eckl. et Zeyh. Leguminosae (III. 3). 65 Afr., Medit.
- Lotoxalis** Small (*Oxalis* p.p.). Oxalidaceae. 15 N. Am.
- Lotus** (Tourn.) L. Leguminosae (III. 5). 15 temp. Eur., As., S. Afr., Austr. *L. corniculatus* L., bird's foot trefoil, and others, in Brit. The floral mechanism (class H) is typical of many of the fam. (*g.v.*). The keel is united above and below, leaving only a small opening at the apex. The pollen is shed in bud into the tip of the keel, and the filaments of five sta. thicken out below the anthers, together forming a piston, which, when the keel is depressed, forces the pollen out in a stream at the apex. The style is immersed in the pollen, but only becomes receptive on being rubbed, so that the fl. has a chance of cross-fert. The plant is useful for pasturage.
- Lotus**, *Zizyphus*; -berry (W.I.), *Byrsonima*; sacred -, *Nymphaea*, *Nelumbium*.
- Loudonia** Lindl. Haloragidaceae. 3 W. Austr.
- Louisiana grass** (Am.), *Paspalum platycaule* Poir.
- Lourea** Neck. Leguminosae (III. 7). 4 trop. As. and Austr.
- Loureira** Meissn. Inc. sed. 1 Cochinchina.
- Lourya** Baill. Liliaceae (VIII). 1 Cochinchina.
- Lousewort**, *Pedicularis*.
- Louteridium** S. Watson. Acanthaceae (IV. A). C. Am.
- Louvelia** Jumelle et Perrier. Palmaceae (IV. 1). 1 Madag.
- Lovage**, *Ligusticum scoticum* L.
- Love apple**, *Lycopersicum esculentum* Mill.; -grass (Ceylon), *Andropogon aciculatus* Retz.; -in a mist, *Nigella*, (W.I.), *Passiflora foetida* L.; -lies bleeding, *Amaranthus*.
- Lovoa** Harms. Meliaceae (II). 2 trop. Afr.
- Lovoma** O. F. Cook (*Ptychosperma* p.p.). Palmaceae (IV. 1). 1 N. Austr.
- Lowia** Scortech. Musaceae. 2 Malaya.
- Lowiara** ×. Orchidaceae. Hybrid between *Brassavola*, *Laelia*, and *Sophranitis*.
- Loxanthera** Blume (*Loranthus* p.p. *BII.*). Loranth. (1). 2 Borneo, Java.
- Loxocalyx** Hemsl. Labiatae (VI). 1 China.
- Loxocarpus** R. Br. (*Didymocarpus* p.p.). Gesneriaceae (1). 3 Malaya.
- Loxocarya** R. Br. Restionaceae. 18 S.W. Austr.
- Loxococcus** H. Wendl. et Drude. Palmae (IV. 1). 1 Ceylon.
- Loxodiscus** Hook. f. Sapindaceae (II). 1 New Caledonia.
- Loxogramme** (Blume) Presl = *Polypodium* L. (Polypod.).
- Loxonia** Jack. Gesneriaceae (1). 1 Sumatra, Java.
- Loxopterygium** Hook. f. Anacardiaceae (3). 5 trop. S. Am.
- Loxostemon** Hook. f. et Thoms. Cruciferae (4). 2 Sikkim to Yunnan.
- Loxostigma** C. B. Clarke. Gesneriaceae (1). 2 Himalaya, China.
- Loxostylis** Spreng. ex Reichb. Anacardiaceae (3). 1 Cape Colony.
- Loxothysanus** Robinson (*Bahia* p.p.). Compositae (6). 2 Mexico.

- Loxsoma** Br. Hymenophyllaceae? 1 N.Z. It agrees with *Trichomanes* in the sorus, but differs widely in the veg. habit, which is that of Cyatheaceae, and is probably better placed in a separate fam.; cf. Gwynne-Vaughan, *Ann. Bot.* XIV. 1901, p. 71.
- Loxsomaceae**. Cf. Filicineae, and Loxsoma.
- Lozanella** Greenman. Ulmaceae. 1 Mexico.
- Lubinia** Comm. ex Vent. (*Lysimachia* p.p.). Primulaceae. 4 S. Afr., Masc. Is., Japan.
- Lucaea** Kunth = *Arthraxon* Beauv. (Gram.).
- Lucens, lucidus** (Lat.), with shining surface.
- Lucerne, *Medicago sativa*** L.
- Lucilia** Cass. Compositae (4). 25 S. Am.
- Luciliopsis** Wedd. Compositae (4). 2 Bolivia.
- Lucinaea** DC. Rubiaceae (1. 7). 10 Malaya.
- Luculia** Sweet. Rubiaceae (1. 5). 2 Himal., Khasias.
- Lucuma** Molina (incl. *Vitellaria* Gaertn. f.). Sapotaceae (1). 50 trop. Am. The fr. of *L. bifera* Molina is ed.
- Lucya** DC. Rubiaceae (1. 2). 1 W.I.
- Ludia** Comm. ex Juss. Flacourtiaceae (4). 2 E. Afr., Madag., Masc.
- Ludovia** Brongn. Cyclanthaceae. 2 trop. S. Am. ♂ fls. as in *Carludovica*, ♀ sunk to stigmas with rudimentary P. Climbers.
- Ludovica** Vieill. ex Guillaumin = *Bikkia* Reinw. (Rubi.).
- Ludwigia** L. Onagraceae (2). 20 cosmop.; 1 Brit.
- Ludwigiantha** Small (*Ludwigia* p.p.). Onagraceae (2). 1 N. Am.
- Lueddemannia** Reichb. f. (*Acineta* p.p. EP.). Orchid. (11. 13). 4 N. S. Am.
- Luederitzia** K. Schum. (*Pavonia* p.p.). Malvaceae (3). 2 S. Afr., Somaliland.
- Luehea** Willd. Tiliaceae. 18 trop. Am., W.I.
- Luerssenia** Kuhn. Polypodiaceae. 1 Sumatra.
- Luffa** (Tourn.) L. Cucurbitaceae (3). 7 trop. *L. cylindrica* M. Roem. (*L. aegyptiaca* Mill.) furnishes the loofah or bath sponge (the vascular bundle net of the pericarp). Fr. of most ed.
- Lugonia** Wedd. Asclepiadaceae (11. 1). 2 Peru, Bolivia.
- Luina** Benth. Compositae (8). 1 N.W. U.S.
- Luisia** Gaudich. Orchidaceae (11. 20). 15 trop. As. to Japan. Cult.
- Lumnitzera** Willd. Combretaceae. 2 palaeotrop., in mangrove (*q.v.*) swamps. Fr. floated by ocean currents.
- Lunania** Hook. Flacourtiaceae (7). 5 W.I., Brazil.
- Lunaria** Tourn. ex L. Cruciferae (2). 2 Eur. *L. biennis* Moench. (*L. annua* L.) is the honesty of gardens.
- Lunasia** Blanco. Rutaceae (1). 5 Malay Archipelago.
- Lunate**, half-moon-shaped.
- Lundia** DC. Bignoniaceae (1). 10 E. S. Am.
- Lunellia** Nieuwland. Scrophulariaceae (111. 1). 3 U.S.
- Lung-wort, *Pulmonaria***, (Am.) *Mertensia*.
- Lupin, *Lupinus***.
- Lupinaster** Buxb. = *Trifolium* Tourn. p.p. (Legum.).
- Lupinus** (Tourn.) L. Leguminosae (111. 3). 150 Am., Medit. Floral mechanism like Lotus. The fr. explodes, its valves twisting spirally. Several are cult. orn. fl., or used as fodder.

- Lupsia** Necker (*Galactites* BH.). Compositae (11). 3 Medit.
Luridus (Lat.), dingy brown or yellow.
Luteus (Lat.), yellow; **luteolus**, pale yellow; **lutescens** (Lat.), yellowish.
Luvunga Buch.-Ham. Rutaceae (v). 5 Indomal.
Luxemburgia A. St Hil. Ochnaceae. 8 Brazil.
Luziola Juss. Gramineae (6). 6 Brazil to Alabama.
Luzonia Elmer. Leguminosae (111. 10). 1 Luzon.
Luzula DC. Juncaceae. 65 temp., chiefly Old World; 6 in Brit. (wood-rush). Rhiz. as in *Juncus*; l. usu. flat.
Luzuriaga Ruiz et Pav. (*Enargea* Banks). Liliaceae (x). 3 S. Am., N. Z.
Lyallia Hook. f. Caryophyllaceae (1. 3). 1 Kerguelen.
Lycaste Lindl. Orchidaceae (11. 12). 30 trop. Am. Epiphytes. A chin is formed by an axial outgrowth from the column.
Lychniothyrus Lindau. Acanthaceae (iv. A). 1 Brazil.
Lychnis (Tourn.) L. (BH. incl. *Agrostemma* L., *Githago* Adans., *Melandrium* Roehl, *Viscaria* Riv.). Caryophyllaceae (11. 1). 10 N. temp. [*; 3 in Brit., incl. *L. Flos-cuculi* L. (ragged robin). Fls. protandrous, suited to bees and Lepidoptera. The fls. often show the sta. filled with a black or brown powder, instead of pollen; this is the spores of the fungus *Ustilago antherarum*, which are thus distributed from plant to plant, like pollen, by the visiting insects. [For *L. dioica* L. see *Melandrium*.]
Lychnodiscus Radlk. Sapindaceae (1). 2 W. Afr.
Lychnophora Mart. Compositae (1). 17 S. trop. Brazil.
Lychnophoriopsis Sch. Bip. Compositae (1). 2 Minas Geraes.
Lycium L. Solanaceae (2). 75 temp. Many have thorny twigs; *L. afrum* L. (Kaffir thorn) is used for hedges in S. Afr. *L. barbarum* L. often cult. under the name tea-plant.
Lycormium Reichb. f. Orchidaceae (11. 13). 1 Peru.
Lycopersicum Hill. (*Solanum* p.p. EP.). Solanaceae (2). 10 S. Am. *L. esculentum* Mill. (*Solanum Lycopersicum* L.) is the tomato or love-apple.
Lycopodiaceae. Lycopodiales, Eligulatae. 2 gen., 190 sp., trop. and temp. The fertilised ovum gives rise directly to the leafy plant; the embryo has a suspensor and a foot; and its upper part at first forms a tuber-like organ, the *protocorm*, from which the l. and stem develop. In P. the stem is short and unbranched, in L. long and much branched, bearing small simple l., and roots developed in acropetal succession. The sporangia are axillary, and form as a rule a dense terminal cone or strobilus. The spores are all of one kind and give rise on germ. to fairly large monoec. prothalli.
Classification and genera:
 Small pl. with a few rad. l. and head of sporophylls on leafless stalk: Phylloglossum.
 Larger pl. with no rad. l. and sporophylls on leafy stalk: Lycopodium.
Lycopodiales. One of the main divisions of Pteridophyta. Mostly leafy plants, with well developed stems and small unbranched l. The sporophylls are usu. massed together into cones, recalling those of the Gymnosperms. Sporangia single at base of l. on upper side, or in axil, 1-loc. They are classified as follows.

A. *ELIGULATAE* (l. with ligule: spores all alike).

B. *LIGULATAE* (l. with ligules: spores of two kinds).

Lycopodium L. Lycopodiaceae. 185 trop. and temp.; 5 in Brit., chiefly in mountain districts (club-mosses). The commonest is *L. clavatum* L. (often called stag-horn moss); the others are *L. Selago* L., *L. alpinum* L., *L. annotinum* L., and *L. inundatum* L. All but the last are xero. evergr. pl. with hard wiry l. The stem branches frequently, apparently dichotomously, but in reality usu. in a monopodial manner. Upon it are borne the roots, which branch dichotomously, and are developed in acropetal succession. The l., narrow and unbranched, are usu. placed spirally upon the stem, but in some form four ranks, as in most Selaginellas. Many have veg. repr. by small bulbils in the l. axils. [Prothalli, see Bruchmann in *Bot. Zeit.* 1899, p. 6.]

Sporangia all alike in structure, containing spores of one kind only; placed upon the bases of l. which are usu. crowded together to form a terminal spike or strobilus. In *L. Selago* some or all of the sporangia are often replaced by small bulbils (*cf. Polygonum viviparum*, *Allium* sp., *Globba*, &c.).

Lycopsis L. Boraginaceae (iv. 3). 3 Eur., As. *L. arvensis* L., small bugloss, in Brit.

Lycopus Tourn. ex L. Labiatae (vi). 10 N. temp. *L. europaeus* L., gipsywort, in Brit.

Lycoris Herb. Amaryllidaceae (i). 4 Japan.

Lycoseris Cass. Compositae (12). 10 C. Am. to Peru.

Lycurus H. B. et K. Gramineae (8). 2 Mexico, New Mexico

Lygeum L. Gramineae (6). 1 Medit., *L. Spartum* Loeff., one of the esparto-furnishing grasses (*cf. Stipa* and *Ampelodesma*).

Lyginia R. Br. Restionaceae. 1 S.W. Austr.

Lygisma Hook. f. Asclepiadaceae (ii. 3). 1 Burma.

Lygistum P. Br. = *Manettia* L. p.p. (Rubi.).

Lygodesmia D. Don. Compositae (13). 6 N. Am.

Lygodisodea Ruiz et Pav. (*Paederia* p.p. *EP.*). Rubi. (ii. 6). 4 trop. Am.

Lygodium Sw. Schizaeaceae. 25 trop. and subtrop. Twining ferns. The stem remains comparatively undeveloped, but the l. has unlimited apical growth, and the long midrib twines around supports like the stem of the hop, bearing pinnae at intervals. The l. are borne on the stem in one dorsal row. The sporangia are in a double row on the back of the fertile pinnae, and each is surrounded by a cup-like indusium.

Lyme grass, *Elymus arenarius* L.

Lyonia Nutt. Ericaceae (ii. 1). 16 E. As., N. Am., 1 circumpolar.

Lyonnetia Cass. = *Anthemis* Michx. p.p. (Comp.).

Lyonothamnus A. Gray. Rosaceae (inc. sed.). 1 California.

Lyonsia R. Br. Apocynaceae (ii. 2). 15 Austr., New Guinea.

Lyperanthus R. Br. Orchidaceae (ii. 2). 8 Austr., N. Z., New Caled.

Lyperia Benth. (*Chaenostema* p.p. *EP.*). Scrophulariaceae (ii. 5). 33 S. Afr.

Lyrate (l.), divided with large term. lobe, as in mustard.

Lyrocarpa Hook. et Harv. Cruciferae (3). 2 California.

Lysias Salisb. (*Habenaria* p.p. *BH.*, *Platanthera* p.p. *EP.*). Orchidaceae (II. 1). 2 N. Am.

Lysicarpus F. Muell. Myrtaceae (II. 1). 1 Queensland.

Lysichiton Schott. Araceae (III). 1 temp. E. As.

Lysidice Hance. Leguminosae (II. 3). 1 S. China.

Lysiella Rydberg (*Habenaria* p.p.). Orchid. (II. 1). 1 N. Am.

Lysiloma Benth. Leguminosae (I. 1). 10 trop. Am., W.I.

Lysimachia (Tourn.) L. Primulaceae. 60 temp. and subtrop.; 4 in Brit. *L. vulgaris* L., yellow loosestrife, is said by Müller to occur in two forms, one in sunny places with large fls. suited to crossing, and one in shady spots with small self-fert. fls. *L. nemorum* L. (yellow pimpernel) and *L. Nummularia* L. (moneywort) also in Brit.

Lysimachiopsis A. A. Heller (*Lysimachia* p.p.). Primul. 4 Hawaiian Is.

Lysinema R. Br. Epacridaceae (2). 5 W. Austr.

Lysionotus D. Don. Gesneriaceae (1). 5 Himalaya, China.

Lysiosepalum F. Muell. Sterculiaceae. 2 W. Austr.

Lysiostyles Benth. Convolvulaceae (1). 1 Guiana.

Lysipomia H. B. et K. Campanulaceae (III). 7 Andes.

Lytanthus Wettst. (*Globularia* p.p.). Globular. 2 Canaries, Azores.

Lythraceae (*EP.*; *BH.* incl. *Oliniaceae*, *Punicaceae*). Dicots. (Archichl. Myrtiflorae). 21 gen., 500 sp., all zones but frigid. Herbs, shrubs, or trees; 1. usu. opp., entire, simple, with very small stipules or none. Fls. in racemes, panicles, or dichasial cymes, ♀, reg. or ♂, usu 4- or 6-merous. The axis ('calyx-tube') is hollow, generally tubular. The sepals are valvate, and frequently possess an epicalyx, formed, as in *Potentilla*, of combined stips. Petals crumpled in bud, sometimes absent. Sta. inserted (often very low down) on calyx-tube, typically twice as many as sepals, but sometimes fewer or ∞. G with simple style and usu. capitate stigma; 2—6-loc., at the base at least, rarely 1-loc. with parietal placenta. Ovules usu. ∞, anat., ascending. The fls. of *Lythrum* (*q.v.*) and others are heterostyled. Dry fr., usu. capsular. No endosp. A few yield dyes (*Lawsonia*, &c.), or are medicinal.
Chief genera: *Peplis*, *Lythrum*, *Cuphea*, *Lagerstroemia*.

Lythrum L. Lythraceae. 23 cosmop.; 2 in Brit., incl. *L. Salicaria* L. (purple loosestrife). The 6-merous fls. are sol. or in small axillary dichasia like Labiatae. Each has 12 sta. in two whorls of different length, and the style again is of different length to any of the sta. Three forms of fl. occur (*trimorphism*), each on a separate pl.; they are distinguished as long- mid- and short-styled fls. The diagram illustrates the arrangement of parts (S = stigma, A = anthers, B = base of fl.), as seen in side view. It is evident that an insect visiting the fls. will tend on the whole to transfer pollen from A₃ to S₃, A₂ to S₂, A₁ to S₁, rather than from sta. of one length to style of another, for it will enter these fls. in the same way and to the same depth. The sta. and style project so far that an insect can alight directly upon them. Darwin (*Forms of Flowers*) showed by a long series of experiments that the best results are obtained by pollinating S₃ from A₃, or S₁ from A₁, &c., i.e. by

S ₃	A ₃	A ₃
A ₂	S ₂	A ₂
A ₁	A ₁	S ₁
B	B	B
long-styled	mid-styled	short-styled

- crossing two plants. The number of seeds thus obtained is much greater and their fertility higher than if S_2 or S_1 be fertilised from A_3 , or any other such union be made. Fertilisation of a stigma by sta. of corresponding length Darwin terms *legitimate*, by sta. of a different length *illegitimate*. The offspring of illegitimate fert. are few, and have the sterility and other sexual characters of hybrids. As in nearly all other heterostyled pl., the longer the sta. the larger the pollen grains, and the longer the style the larger the papillae of the stigma.
- Maba** Forst. Ebenaceae. 70 trop. and subtrop. The wood of some is used as a substitute for ebony. Fr. of some ed.
- Mabea** Aubl. Euphorbiaceae (A. II. 7). 16 trop. Am.
- Mabee bark** (W.I.), *Ceanothus reclinatus* L'Hérit.
- Macadamia** F. Muell. Proteaceae (II). 5 Austr. (nut-tree). Seeds ed.
- Macairea** DC. Melastomaceae (I). 20 trop. S. Am.
- Macaranga** Thou. Euphorbiaceae (A. II. 2). 100 palaeotrop. *M. caladifolia* Becc. has hollow peduncles inhabited by ants.
- Macarisia** Thou. Rhizophoraceae. 2 Madag.
- Macarthuria** Huegel ex Endl. Aizoaceae (I). 3 Austr., S.E. and S.W.
- Macary butter** (W.I.), *Picramnia Antidesma* Sw.
- Macassar oil**, *Cananga odorata* Hook. f.
- Macaw bush** (W.I.), *Solanum mammosum* L.; - tree, *Acrocomia*.
- Macbridea** Ell. ex Nutt. Labiatae (VI). 2 S.W. U.S.
- Macchie**, maqui, the copse association of Mediterranean coasts.
- Macdougalia** A. A. Heller. Compositae (6). 1 N. Am.
- Mace**, *Myristica fragrans* Houtt.; - reed, *Typha*.
- Macfadyena** A. DC. Bignoniaceae (I). 3 S. Am.
- Macgregoria** F. Muell. Stackhousiaceae. 1 E. Austr.
- Macgregorianthus** Merrill. Thymelaeaceae. 1 Luzon.
- Machadoa** Welw. ex Benth. et Hook. f. Passifloraceae. 1 trop. Afr.
- Machaeranthra** Nees (*Aster* p.p. *BH.*). Compositae (3). 45 N. Am.
- Machaerium** Pers. Leguminosae (III. 8). 65 trop. Am. Resembles Dalbergia. Many are lianes, climbing by sensitive lateral shoots, and provided with recurved stipular thorns. Some of the jacarandá timbers (rosewoods) are furnished by this gen. (*cf.* Dalbergia).
- Machaerocarpus** Small (*Damasonium* p.p.). Alism. 1 California.
- Machaonia** Humb. et Bonpl. Rubiaceae (II. 2). 12 trop. Am., W. I.
- Machilus** Nees. Lauraceae (I). 20 S.E. As.
- Mackay bean**, *Entada scandens* Benth.
- Mackaya** Harv. (*Asystasia BH.*). Acanthaceae (IV. B). 1 S. Afr. Cult. orn. fl.
- Mackinlaya** F. Muell. Araliaceae (3). 2 Queensland.
- Macleania** Hook. Ericaceae (III. 2). 15 W. trop. Am. Cult. orn. fl.
- Macleya** Rchb. (*Bocconia* p.p.). Papaveraceae (II). 1 China, Japan. Cult. orn. fl.
- Macludrania** × André. Urticaceae. Hybrid Maclura-Cudrania.
- Maclura** Nutt. Moraceae (I). 1 S.W. U.S., *M. aurantiaca* Nutt. (bow-wood or Osage orange). The tree bears thorns (branches). Fls. dioec., the ♂ in pseudo-racemes, the ♀ in pseudo-heads; individual fls. like *Morus*. After fert. each ♀ fl. produces an achene enclosed in the fleshy P, and at the same time the common recept. swells up into a

fleshy mass, so that a large yellow multiple fr. is formed. The wood is used for bows, carriage-poles, &c. The l. are used for feeding silkworms. [*M. tinctoria* D. Don, &c. = *Chlorophora*.]

- Macnabia** Benth. Ericaceae (IV. 1). 1 S.W. Cape Colony.
Macnemaraea Willem. Inc. sed. 1 China.
Macodes Lindl. Orchidaceae (II. 2). 2 Malaya. Cult. orn. l.
Macomaria × Rolfe. Orchid hybrid, *Macodes* and *Haemaria*.
Macoubea Aubl. Inc. sed. 1 Guiana.
Macowania Oliv. Compositae (4). 2 S. Afr.
Macphersonia Blume. Sapindaceae (1). 5 trop. E. Afr., Madag.
Macqui berry, *Aristolochia Maqui* L'Hérit.
Macrachaenium Hook. f. Compositae (12). 1 Patagonia.
Macradenia R. Br. Orchidaceae (II. 19). 5 W.I., Guiana, C. Am.
Macranthera Torr. ex Benth. Scrophulariaceae (III. 2). 2 S. U.S.
Macranthisiphon Bur. Bignoniaceae (1). 1 Ecuador, Peru.
Macreightia A. DC. in DC. = *Maba* Forst. p.p. (Eben.).
Macro- (Gr. pref.), long, large; **-podous** (embryo), without cotyledons; **-sporangium**, that which holds **-spores**, the larger when there are two kinds, *Pteridophyta*.
Macrocalyx Costantin et Poisson. Malvaceae (4) 1 Madag.
Macrocalyx Miers. Rubiaceae (inc. sed.). Nomen.
Macrocarpaea Gilg (*Lisianthus* BH.). Gentian. (1). 10 Cuba, trop. S. Am.
Macrocarpium Nakai (*Cornus* p.p.). Cornaceae. 1 Japan.
Macrocentrum Hook. f. Melastomaceae (1). 3 Guiana, E. Brazil.
Macrochaetium Steud. (*Tetraria* p.p. EP.). Cyperaceae (II). 1 S. Afr.
Macrochordion de Vriese (*Aechmea* p.p. BH.). Bromeli. (4). 6 S. Am. Cult. orn. fl.
Macroclinidium Maxim. Compositae (12). 2 Japan.
Macroclinium Barb. Rodr. = *Ornithocephalus* Hook. p.p. (Orch.).
Macrocnemum P. Br. Rubiaceae (1. 5). 10 W.I., S. Am.
Macrocoeculus Becc. Menispermaceae. 1 New Guinea.
Macrochondron Taub. Cunoniaceae. 1 Rio de Janeiro.
Macrodiscus Bur. (*Distictis* Mart.). Bignoniaceae (1). 1 W.I.
Macrolobium Schreb. (*Vouapa* Aubl.). Legumin. (II. 3). 20 trop. Am., Afr.
Macrolotus Harms (*Argyrolobium* p.p. EP.). Legum. (III. 3). 1 trop. Afr.
Macromeria D. Don. Boraginaceae (IV. 4). 8 C. and S. Am.
Macropanax Miq. Araliaceae (1). 3 Sikkim to Java.
Macropelma K. Schum. Asclepiadaceae (1). 1 E. Afr.
Macropeplus Perkins. Monimiaceae. 1 E. Brazil.
Macropetalum Burch. ex Decne. Asclepiadaceae (II. 3). 2 Cape Colony.
Macrophloga Becc. (*Chrysalidocarpus* p.p.). Palm. (IV. 1). 1 Madag.
Macropidia J. Drumm. ex Harv. Amaryllidaceae (III). 1 W. Austr.
Macropiper Miq. (*Piper* p.p. BH.). Piperaceae. 6 Polynesia.
Macroplectrum Pfitz. (*Angraecum* p.p.). Orchidaceae (II. 20). 1 Madag., Masc. (*A. sesquipedale*, q.v.).
Macropodandra Gilg. Buxaceae. 1 trop. C. Afr.
Macropodium (R. Br. in) Ait. Cruciferae (4). 1 C. As.

Macropsychanthus Harms. Leguminosae (III. 10). 2 New Guinea, Phil. Is.

Macropteranthes F. Muell. Combretaceae. 4 N. Austr.

Macrorhamnus Baill. Rhampaceae. 1 Madag.

Macrorhynchus Less. = *Troximon* Nutt. (Comp.).

Macrorungia C. B. Clarke. Acanthaceae (IV. B). 4 trop. and S. Afr.

Macrosepis H. B. et K. Asclepiadaceae (II. 1). 7 trop. Am.

Macrosepalum Regel et Schmalh. Crassulaceae. 1 Turkestan.

Macrosiphonia Muell.-Arg. Apocynaceae (II. 1). 10 trop. Am. Xero.

Macrosolen Blume = *Loranthus* L. p.p. (*BH.*) = *Elytranthe* Blume p.p.

Macrosphyra Hook. f. Rubiaceae (I. 8). 2 W. trop. Afr.

Macrostegia Nees in DC. Acanthaceae (IV. A). 1 Peru.

Macrostylis Bartl. et Wendl. Rutaceae (I). 10 S.W. Cape Colony.

Macrotonia DC. Boraginaceae (IV. 4). 8 Medit. to Himalaya.

Macrotorus Perkins (*Mollinedia* p.p.). Monimiaceae. 1 Rio de Janeiro.

Macrotropis DC. = *Ormosia* Jacks. (Legum.).

Macrozamia Miq. Cycadaceae, *q.v.* 15 Austr. ✓

Macrozanonia Cogn. (*Zanonia* p.p.). Cucurbitaceae (I). 1 Java.

Maculatus (Lat.), spotted.

Mad-apple (W.I.), *Solanum Melongena* L.

Madagascar clove, *Ravensara aromatica* J. F. Gmel.; - **plum**, *Flacourtia*; - **rubber**, *Landolphia*, &c.

Madar fibre, *Calotropis gigantea* Ait.

Madarosperma Benth. Asclepiadaceae (II. 1). 1 Upper Amazon.

Maddenia Hook. f. et Thoms. Rosaceae (V). 2 Himalaya.

Madder, *Rubia tinctorum* L.; **field -**, *Sherardia arvensis* L.; **Indian -** (W.I.), *Oldenlandia umbellata* L.

Madia Molina. Compositae (5). 15 W. Am. *M. sativa* Mol. (madi, Chili; tarweed, U.S.), cult. for the oil from the seed.

Madras hemp, *Crotalaria juncea* L.

Madre de cacao (W.I.), *Erythrina umbrosa* H. B. et K.

Madronella Greene (*Monardella* p.p.). Labiatae (VI). 35 N. Am.

Maerua Forsk. Capparidaceae (II). 30 trop. Afr., As. The fr. is a berry, constricted between the seeds like a lomentum.

Maesa Forsk. Myrsinaceae (I). 35 trop., except Am.

Maesobotrya Benth. in Hook. Euphorbiaceae (A. I. 1). 3 trop. Afr.

Maesopsis Engl. Rhamnaceae. 2 trop. E. Afr.

Mafekingia Baill. (*Raphiacme* EP.). Asclepiadaceae (I). 1 S. Afr.

Mafootoo-withe (W.I.), *Entada scandens* Benth.

Maga Urb. (*Thespesia* p.p.). Malvaceae (4). 1 Porto Rico.

Magnistipula Engl. Rosaceae (VI). 3 trop. Afr.

Magnolia L. Magnoliaceae. 21 As., N. Am. (esp. trop.). Trees with sheathing stips. covering the bud, and term. fls. P petaloid, except sometimes the outermost l., and in whorls. Sta. and cpls. ∞ , on a lengthened torus. Protogynous. Fr. an aggregate of follicles; each dehisces by its dorsal suture, and the seed dangles out of it on a long thread formed by the unravelling of the spiral vessels of the funicle. The outer integument of the ovule becomes fleshy as it ripens, and the seeds may thus be distr. by birds. Several cult. orn. fl.

Magnoliaceae (EP.; *BH.* incl. *Trochodendraceae*). Dicots. (Archichl. Ranales). 9 gen., 70 sp., trop. and subtrop. trees and shrubs (some

climbing). They have alt. l., which in the *Magnolieae* have big stips., united to form a thimble-like hood, covering in the bud all the younger l. As each l. expands it throws off the hood of the next older l. The fls. are term. (in most) or axillary, usu. sol., ♂ or uni-sexual. In the *Magnolieae* the P is cyclic, in the rest of the fam. it is spiral, as are the sta. and cpls. throughout. P usu. petaloid; A ∞ , hypog.; G usu. ∞ , on a long torus. Follicle, berry, or samara; seed albuminous, the endosp. not ruminant. The timber of most M. is good; Illicium, &c., furnish economic products. *Magnolia* and *Liriodendron* are cult. for their fls., &c. *Chief genera*: *Magnolia*, *Liriodendron*, *Kadsura*, *Schizandra*, *Illicium*, *Drimys*.

Magonia A. St. Hil. Sapindaceae (II). 2 Brazil.

Magney, *Agave americana* L.

Magydaris Koch ex DC. Umbelliferae (III. 4). 2 Atl. Eur.

Mahafalia Jumelle et Perrier. Asclepiadaceae (II. 4). 1 Madag.

Mahernia L. (*Hermannia* EP.). Sterculiaceae. 8o Afr.

Mahoe (W.I.), *Paritium*, *Thespesia*, *Hibiscus*.

Mahogany, strictly speaking the timber of *Swietenia Mahogoni* Jacq. (Honduras, &c.) or *Khaya senegalensis* A. Juss., but the commercial timbers include many that resemble these, e.g. those of *Cedrela*, *Melia*, *Dysoxylum* and other Meliaceae, and of *Kiggelaria*, &c. See Stone, *Timbers of Commerce*.

Mahonia Nutt. (*Berberis* p.p.). Berberidaceae. 4o *. Cult. orn. shrubs.

Mahua, **mahwa**, *Bassia latifolia* Roxb.

Mahurea Aubl. Guttiferae (I) (Ternstr. BH.). 4 Guiana, Venezuela.

Mahya Cordem. (*Sphacele* p.p.). Labiatae (VI). 1 Bourbon.

Maianthemum (Weber in) Wigg. Liliaceae (VII). 1 N. temp. (incl. Brit.). Fl. 2-merous, protogynous.

Maidenhair fern, *Adiantum*; - **tree**, *Ginkgo biloba* L.

Maidenia Rendle. Hydrocharidaceae. 1 N.W. Austr.

Maieta Aubl. Melastomaceae (I). 8 trop. Am. Some have bladdery outgrowths of the l. inhabited by ants (cf. *Duroia*). Fr. ed.

Maihueña Phil. (*Opuntia* p.p.). Cactaceae (II). 3 Chili, Argentina.

Maillardia Frapp. et Duch. Moraceae (I). 1 Bourbon.

Maillea Parl. (*Phleum* p.p. EP.). Gramineae (8). 1 Medit. Is.

Maingaya Oliv. Hamamelidaceae. 1 Penang.

Mairea Nees. Compositae (3). 10 Cape Colony.

Maize, *Zea Mays* L.; **water** -, *Victoria regia* Lindl.

Majidea J. Kirk ex Oliv. (*Harpullia* p.p. EP.). Sapind. (II). 1 trop. Afr.

Majoe-bitter (W.I.), *Picramnia Antidesma* Sw.

Majorana (Tourn.) Rupp. (*Origanum* p.p. BH.). Labiatae (VI). 6 E. Medit.

Majus (Lat.), greater.

Malabaila Hoffm. Umbelliferae (III. 6). 25 Medit., W. As.

Malacantha Pierre (*Chrysophyllum* p.p.). Sapot. (I). 5 W. trop. Afr.

Malacca cane, *Calamus*.

Malachium Fries = *Stellaria* L. p.p. (Caryophyll.).

Malachra L. Malvaceae (3). 6 trop. and subtrop. Am.

- Malacocarpus** Salm-Dyck (*Echinocactus* p.p. *BH.*). Cactaceae (III. 1).
8 S. Brazil, Uruguay.
- Malacochaete** Nees = *Scirpus* Tourn. p.p. (Cyper.).
- Malacolepis** A. A. Heller (*Malacothrix* p.p.). Compos. (13). 1 Calif.
- Malacomeles** Decne. (*Naegelia* Lindl.). Rosaceae (II). 2 Mexico.
- Malacophilous**, fert. by snails.
- Malacothamnus** Greene (*Malvastrum* p.p.). Malvaceae (2). 9 N. Am.
- Malacothrix** DC. Compositae (13). 15 Calif.
- Malaisia** Blanco. Moraceae (I). 1 Malaya, Austr., Polynesia.
- Malanea** Aubl. Rubiaceae (II. 2). 10 trop. S. Am., W.I.
- Malaxis** Soland. ex Sw. Orchidaceae (II. 4). 1 N. temp. (incl. Brit.),
M. paludosa Sw. The fl. is twisted through 360°, so that the labellum is again uppermost. See Darwin's *Orchids*, p. 130.
- Malay apple**, *Eugenia malaccensis* L.
- Malcomia** R. Br. (*Malcolmia* Spreng.). Cruciferae (4). 30 Medit.
- Male bamboo**, *Dendrocalamus strictus* Nees; -fl., with sta. only.
- Malesherbia** Ruiz et Pav. Malesherbiaceae. 20 W. S. Am. Herbs or undershrubs with alt. often deeply lobed exstip. l., often very hairy. Fls. ♂, reg., 5-merous; axis tubular, running out into a disc and gynophore, with which the sta. are concrescent. G (3) with parietal plac. and ∞ ov.; styles 3—4 below apex of ovary. Caps. No aril.
- Malesherbiaceae** (*EP.*; *Passifloraceae* p.p. *BH.*). Dicots. (Archichl. Parietales). 1 gen., *Malesherbia*, *q.v.* It differs from *Passifl.* in having no aril and the styles more deeply inserted and widely separated; from *Turneraceae* in having no aril, in the aestivation of the C, and in the persistent recept.
- Malinvaudia** Fourn. Asclepiadaceae (II. 4). 1 S. Brazil.
- Mallee** (scrub), *Eucalyptus*, dwarf sp. like *E. dumosa* Cunn., &c.
- Malleola** J. J. Sm. et Schlechter (*Saccolabium* p.p.). Orchid. (II. 20). 6 Malaya.
- Mallinoa** Coult. Compositae (2). 1 Guatemala.
- Mallophora** Endl. Verbenaceae (3). 1 W. Austr.
- Mallostoma** Karst. (*Arcythophyllum* *EP.*). Rubiaceae (I. 2). 51 trop. Am.
- Mallotonia** Britton. (*Tournefortia* p.p.). Boraginaceae (III). 1 W.I.
- Mallotopus** Franch. et Sav. Compositae (8). 1 Japan.
- Mallotus** Lour. Euphorbiaceae (A. II. 2). 80 palaeotrop. Kamala dye is obtained from the caps. of *M. philippinensis* Müll.-Arg. (Ceylon—Austr.).
- Mallow**, *Malva* and other *Malvaceae*; **marsh -**, *Althaea officinalis* L., **musk -**, **rose -**, *Hibiscus*; **tree -**, *Lavatera*.
- Malmea** Fries. Anonaceae (1). 1 Brazil.
- Malope** L. Malvaceae (1). 3 Medit. The 3 l. of the epicalyx are very large. Cpls. ∞, in vertical rows (see fam.). Cult. orn. fl.
- Malortiea** H. Wendl. (*Reinhardtia* p.p. *EP.*). Palmaceae (IV. I.). 4 C. Am.
- Malouetia** A. DC. Apocynaceae (II. 2). 20 S. Am., Afr.
- Malperia** Wats. Compositae (2). 1 Mexico.
- Malpighia** Plum. ex L. Malpighiaceae (II). 25 trop. Am., W.I.
Not climbers. Some have stinging hairs; some have cleist. fls.

Malpighiaceae (EP., BH.). Dicots. (Archichl. Geraniales). 55 gen., 650 sp., trop., esp. S. Am. Shrubs or small trees, usu. climbing, forming a marked feature among the trop. lianes. Stem-anatomy peculiar. L. usu. opp., entire, stip., frequently gland-dotted; pl. usu. covered with peculiar branched unicellular hairs. Infl. racemose. Fl. ♀, obliquely 4. K (5), imbr., often with large glands at the base of (outside) the sepals; C 5, petals usually clawed, imbr.; A 5 + 5, obdiplost., often fewer, joined in a ring at the base; anthers opening intr. by longitudinal splits; G (3), obliquely placed in the fl., 3-loc. with axile plac.; one ovule in each loc., pend., semi-anatr., with ventral raphe. Fr. typically a schizocarp breaking into 3 mericarps, but frequently one or more of the loc. abort. The mericarps are often winged, in some cases, e.g. *Banisteria*, like those of *Acer*. Seed exalbum.

Classification and chief genera (after Niedenzu):

I. *PYRAMIDOTORAE* (torus pyramidal; mericarps usually winged): *Tetrapteris*, *Banisteria*, *Acridocarpus*.

II. *PLANITORAE* (torus flat or concave; mericarps not winged): *Malpighia*, *Bunchosia*, *Byrsonima*.

Malt, barley steeped to start germ., and then kiln-dried.

Maltebrunia Kunth. Gramineae (6). 2 Madag., S. Afr.

Malus Tourn. ex L. = *Pyrus* Tourn. p.p. (Ros.).

Malva (Tourn.) L. (BH. excl. *Callirhoe* Nutt.). Malvaceae (2). 30 N. temp.; 3 in Brit. Fl. of the ordinary type of the fam., with ∞ cpls. Two Brit. sp. *M. sylvestris* L. and *M. rotundifolia* L. (large and small mallow) afford a contrast in floral mech., &c. Honey is secreted in little pockets in the recept., covered with hairs which exclude rain and very short-tongued insects. The large mallow is very protandr.; the sta. stand up at first in the middle of the fl., and afterwards bend outwards and downwards whilst the styles lengthen and occupy the original positions of the sta. The small mallow has much smaller fls., much less visited by insects; they go through stages similar to those described above, but at the end of the ♀ stage the styles bend downwards, twist in among the anthers and pollinate themselves.

The l. in autumn may usu. be seen covered with brown spots caused by the fungus *Puccinia malvacearum* (cf. Berberis).

Malvaceae (EP.; B.H. incl. *Bombacaceae*). Dicots. (Archichl. Malvales). 35 gen., 700 sp., trop. and temp. Herbs, shrubs, or trees, with alt. stip. l. Fls. sol. or in cpd. cymose infls. made up of cincinni, ♀, reg., usu. 5-merous. Epicalyx often present; probably an aggregation of bracteoles, but perhaps stipular like that of some Rosaceae (q.v.). K 5 or (5), valvate; C 5 conv., the petals usu. asymmetrical; A usu. ∞ , owing to branching of the inner whorl of sta. (the outer is usu. absent), all united below into a tube which is joined to the petals and at first sight makes the C appear gamopetalous; the anthers are monothecous (i.e. each = half an anther), the pollen grains spiny. G (1— ∞) frequently (5), multi-loc., with axile placentae. In § I a division of the cpls. by horiz. transv. walls occurs, producing vertical rows of one-ovuled portions. Ovules 1— ∞ in each cpl., anatr., usually ascending, sometimes pend. Malva-

viscus has a berry, the rest of the order dry fr., either caps. or schizocarps. Embryo usually curved, surrounded by endosp. The fls. are generally protandr. (see *Malva* and *Goethea*). *Gossypium* (cotton), *Hibiscus*, and others are of economic value. Many are garden favourites. [BH. chars. incl. 1. often palmately lobed or cpd.; A 5—∞, free or united, pollen smooth; endosp. little or none.]

Classification and chief genera (after Schumann):

A. Cpls. in vert. rows.

1. *Malopeae*: *Malope*, *Kitaibelia*.

B. Cpls. in one plane.

2. *Malveae* (schizocarp; styles as many as cpls.): *Abutilon*, *Lavatera*, *Althaea*, *Malva*, *Anoda*.

3. *Ureneae* (schizocarp; styles twice as many as cpls.): *Urena*, *Goethea*, *Pavonia*.

4. *Hibisceae* (capsule): *Hibiscus*, *Gossypium*.

Malvales. The 26th order (EP.) of Archichlamydeae. The 6th cohort (BH.) of Polypetalae.

Malvastrum A. Gray. *Malvaceae* (2). 85 Am. and S. Afr.

Malvaviscus Dill. ex Adans. *Malvaceae* (3). 12 warm Am.

Mammea L. *Guttiferae* (IV). 1 W. Ind., *M. americana* L., cult. for ed. fr., the Mammee or St Domingo apricot. The fls. are used in preparing a liqueur (eau de Créole).

Mammee, *Mammea americana* L.; - **sapote**, *Lucuma mammosa* Gaertn. f.

Mammilla, *Cactaceae*.

Mammillaria Haw. (incl. *Anhalonium* Lem.). *Cactaceae* (III. 2). 400 trop. Am. Mostly small plants of very condensed form, often almost spherical in outline, with well-marked mammillae (see fam.). There is a division of the growing point into two in the course of formation of the mammilla, and the part at the base of the mammilla (*i.e.* in the axil) gives rise to the fl. The G elongates after fert. so that the tip of the long red berry is raised clear of the thorns. In some sp. veg. repr. and dispersal occurs by the mammillae breaking off and blowing about or adhering to animals, Fr. ed.

Mammoth tree, *Sequoia gigantea* Lindl. et Gord.

Man-of-the-earth (Am.), *Ipomoea pandurata* Meyer; - **orchis**, *Aceras anthropophora* R. Br.

Mana grass (Ceylon), *Cymbopogon confertiflorus* Stapf.

Managa Aubl. Inc. sed. 1 Guiana.

Manatu-grass (W.I.), *Thalassia*.

Manchineel, *Hippomane Mancinella* L.

Mancoa Wedd. *Cruciferae* (3). 1 Andes.

✓ **Mandevilla** Lindl. *Apocynaceae* (II. 1). 45 trop. and sub trop. Am. ✓

Mandioca, *Manihot Aipi* Pohl.

Mandragora (Tourn.) L. *Solanaceae* (2). 3 Medit. to Himal. (mandrake). For superstitions connected with this, cf. *Treas. of Bot.*

Mandrake, *Mandragora*, (Am.) *Podophyllum*.

Manettia Mutis. *Rubiaceae* (I. 5). 30 trop. Am.

Manfreda Salisb. (*Agave* p.p.). *Amaryllidaceae* (II). 20 N. Am.

Mangabeira rubber, *Hancornia speciosa* Gomez.

Mangel (mangold) **wurzel**, *Beta vulgaris* L. var.

- Mangifera** L. Anacardiaceae (I). 30 Indomal. *M. indica* L. is the mango, everywhere cult. in the trop. for its fr., a large drupe derived from the 1 cpl. of the fl. Numerous vars. occur.
- Manglietia** Blume (*Magnolia* p.p. EP.). Magnoliaceae. 3 Indomal.
- Manglilla** Juss. = *Myrsine* L. (BH.) = *Rapanea* Aubl.
- Mango**, *Mangifera indica* L.
- Mangonia** Schott. Araceae (VII). 1 Brazil.
- Mangosteen**, *Garcinia Mangostana* L.
- Mangroves**, the association of pl. of the muddy swamps at the mouths of rivers and elsewhere in the trop., over which the tide flows daily, leaving the mud bare at low water; chiefly |*. Chief gen. *Rhizophora*; others are *Acanthus*, *Aegiceras*, *Avicennia*, *Bruguiera*, *Carapa*, *Ceriops*, *Conocarpus*, *Laguncularia*, *Kandelia*, *Lumnitzera*, *Scyphiphora*, *Sonneratia*, &c. Usu. much branched, with aerial roots, both flying buttress and pillar roots; aerating roots rise from the mud in *Avicennia*, *Bruguiera*, *Sonneratia*, &c. Many show viviparous germination.
- Manicaria** Gaertn. Palmaceae (IV. 1). 1 trop. S. Am.
- Manicoba rubber** Gaertn., *Manihot Glaziovii* Muell.-Arg.
- Manihot** Tourn. ex Adans. Euphorbiaceae (A. II. 4). 150 S. Am. to Mexico. Shrubs and herbs with monoec. fls. *M. Glaziovii* Müll.-Arg. and other sp. show bud-protection well. The petiole of the young leaf curls upwards and inwards, so that the leaf is brought above the bud. *M. utilissima* Pohl is the bitter, *M. Aipi* Pohl (*M. palmata* Müll.-Arg.) the sweet cassava or mandioc; both are extensively cult. in the trop. for their large tuberous roots, which contain much starch, &c., and form a valuable food-stuff. The bitter cassava is the one usually cult.: its poisonous juice is squeezed out, and finally dissipated in the drying. The ground roots form mandioc or cassava meal, sometimes called Brazilian arrowroot. By a special mode of preparation, tapioca is prepared from the root. The poisonous juice, evaporated to a syrup and thus rendered harmless, forms an antiseptic, known as cassareep, used in preserving meat, &c. *M. Glaziovii* is the Ceara rubber; rubber is obtained by tapping the stem of the tree in the usual way. Several other sp. also yield rubber.
- Manila copal**, *Agathis Dammara* Rich.; - **elemi**, *Canarium commune* L.; - **hemp**, *Musa textilis* Née.
- Maniltoa** Scheff. Leguminosae (II. 2). 1 Colombia.
- Manioca**, *Manihot Aipi* Pohl.
- Manisuris** L. = *Rottboellia* L. f. (Gram.).
- Manisuris** Sw. Gramineae (2). 1 trop.
- Manjack** (W.I.), *Cordia macrophylla* L.
- Manna** D. Don = *Alhagi* Tourn. (Legum.).
- Manna**, *Alhagi*, *Tamarix*; - **grass** (Am.), *Glyceria*.
- Mannia** Hook. f. Simarubaceae. 1 trop. W. Afr.
- Manniella** Reichb. f. Orchidaceae (II. 2). 1 trop. Afr.
- Manniophyton** Muell.-Arg. Euphorbiaceae (A. II. 2). 1 trop. W. Afr.
- Manochlaenia** Börner = *Carex* Dill. p.p. (Cyper.).
- Manoelia** Bowdich. Inc. sed. 1 Madeira.
- Manotes** Soland. ex Planch. Connaraceae. 7 trop. Afr.
- Manothrix** Miers. Apocynaceae (I. 1). 2 Brazil.

Mansoa DC. (*Cuspidaria* BH.). Bignoniaceae (1). 5 Brazil, Bolivia.

Mansonia J. R. Drumm. Triplochitonaceae. 1 Burma.

Mantisia Sims. Zingiberaceae (1). 2 Indomal. *M. saltatoria* Sims (dancing girls) often cult. for its curious fls., borne on separate shoots from the rhiz. At the base is the K, then 3 broad pets., a curiously shaped labellum and 2 filamentous stds., and beyond all the fertile sta. and style.

Mantle leaf, *Platynerium*.

Manulea L. Scrophulariaceae (II. 5). 30 S. Afr.

Manzanita, *Arctostaphylos*.

Maoutia Wedd. Urticaceae (3). 10 trop. As. and Polynes. No P in the ♀ fl. *M. Puya* Wedd. yields good fibre.

Mapania Aubl. Cyperaceae (II). 45 trop.

Mapaniopsis C. B. Clarke. Cyperaceae (II). 1 N. Brazil.

Maple, *Acer*; -sugar, *Acer saccharum* Marshall.

Mapouria Aubl. (*Psychotria* p.p. BH.). Rubiaceae (II. 5). 80 trop.

Mappa A. Juss. = *Macaranga* Thou. p.p. (Euphorb.).

Mappia Jacq. Icacinaceae. 7 trop. As. and Am.

Maprounea Aubl. Euphorbiaceae (A. II. 7). 3 trop. Am., W. Afr.

Maqui, the copse association of the Medit. coasts.

Marah Kellogg (*Echinocystis* p.p.). Cucurbitaceae (4). 10 N. Am.

Marainophyllum Pohl. Inc. sed. Nomen.

Maranta Plum. ex L. Marantaceae. 18 trop. Am. The stds. β γ (see fam.) are present in many. The rhiz. of *M. arundinacea* L. furnishes West Indian arrowroot, prepared by grinding and washing to free the starch. ✓

Marantaceae (EP.; *Scitamineae* p.p. BH.). Monocots (Scitamineae). 12 gen., 150 sp. trop., chiefly Am. Herbaceous perennials of various habit, resembling Zingiberaceae, but at once distinguishable by the presence of a swollen pulvinus or joint at the junction of petiole and leaf-blade. L. 2-ranked, sheathing; one side of the l. is larger than the other and is covered by it when the l. is rolled up in the bud. Fls. usu. upon the leafy shoots, in pairs in the axils of the bracts, either one pair or many (cymose, drepania). The fl. is asymmetric, but in each pair the one is complementary to the other (*i.e.* like its reflection in a glass). Fl. ♀, pentacyclic, 3-merous. P 3 + 3, clearly distinguished in most cases into calyx and corolla. As in the allied fams., the A is united to the C. There is one fertile sta., often petaloid, and round it various petaloid structures (*cf.* carefully *Canna* and Zingiberaceae). The labellum of *Canna* is represented by a hood-shaped l. covering the style (Kapunzenblatt). The staminode α is repres. by a more or less leathery or callous l. (Schwielenblatt); β and γ are not always present, but are petaloid when they do occur. The same views as to the morphology of these structures have been proposed as in the case



Floral diagram of *Maranta bicolor* (modified from Eichler). $\alpha\beta\gamma$, staminodes; L., labellum (Kapunzenblatt).

of *Canna* *g.v.*). $\bar{G}$ (3), typically 3-loc. 3 ovuled, but commonly 2 of the loc. are abortive (as in fig.) and the third contains one ovule; ovule ana-campylo-tropous: style curved and at first enclosed in the 'Kapuzenblatt' or hood. The fl. often has an explosive mechanism. The pollen is shed upon the style, which remains held in the hood. Insects enter upon the staminode *a*, and in sucking honey (secreted by glands in the septa of the ovary) set free the style, which descends with a sudden shock, touching the insect's back and at the same time showering the pollen upon it (*cf.* *Genista*). Fr. usu. a loculic. caps. Embryo curved, in perisperm. Seed often arillate. *Maranta* and others furnish arrowroot, &c. *Chief genera*: *Calathea*, *Maranta*, *Thalia*.

Marantochloa Brong. ex Gris. Marantaceae. 1 Réunion.

Marasmodes DC. Compositae (7). 3 Cape Colony.

Marathrum Humb. et Bonpl. Podostemaceae. 8 trop. Am.

Marattia Sw. Marattiaceae (2). 30 trop. and N.Z. The synangium is oval and the compartments open by slits into a central space.

Marattiaceae. Marattiales. 5 gen., 50 sp., trop. and sub trop. Large ferns, with a stout stem rarely more than a couple of feet long, not branched (exc. *Danaea*), and large pinnate l. (palmate in *Kaulfussia*). At the base of the l., which shows circinate veneration, occur a pair of stipules, which aid in bud-protection. The roots arise at the growing point, one or more to each l.; they burrow obliquely outwards, emerging some distance from the apex.

Sporangia ∞ upon the veins on the lower side of ordinary foliage l. The sorus stands on a swollen placenta; in *Angiopteris* the component sporangia are free from one another, in the other gen. they combine to form a *synangium*, with as many chambers as sporangia. The mode of opening varies (see classification, below). The spores are all of one kind (except that they vary in shape), and give rise to monoecious prothalli, resembling those of the ordinary ferns. These are large and may live for some years.

Classification and genera:

1. *Angiopterideae* (sporangia free): *Angiopteris* (sori of 10—20 sporangia), *Archangiopteris* (sori linear, of 80—160 sporangia).

2. *Marattieae* (synangia oval): *Marattia* (leaf pinnate); *Kaulfussia* (leaf palmate with curious chambers on lower side).

3. *Danaeae* (synangia long, opening by terminal pore): *Danaea*.

Marattiales, one of the chief groups of Pteridophyta (*g.v.*). Only fam. Marattiaceae.

Marcellia Baill. Amarantaceae (2). 2 trop. W. Afr.

Marcrescent (P), one persisting withered round the fr.

Marcetia DC. Melastomaceae (1). 20 S. Am.

Marcgravia Plum. ex L. Marcgraviaceae. 20 trop. Am., climbing epiphytic shrubs, with two kinds of shoots—veg. with two-ranked sessile l. and clasping roots, and flg., with stalked l., spirally arranged, and ending in a cymose umbel of fls. The central fls. are abortive and their bracts are transformed into pocket-like coloured nectaries with stalks. The fertile fls. stand upside down, the infl. being pendulous, and humming-birds rub against them with their backs, while drinking honey.

- Marcgraviaceae** (*EP.*; *Ternstroemiaceae* p.p. *BH.*). Dicots. (Archichl. Parietales). 5 gen., 40 sp., trop. Am. Trees or shrubs, often epiph., usu. with pend. infls. whose bracts are brightly coloured and transformed into nectaries. Fls. ♂. K 4—5; C (4—5), dropping off as a cap; A 3—∞, free or united to one another and to the corolla; G originally 1-loc. with 2 parietal plac.; ovules ∞, anatr.; style simple. Capsule. Endosp. thin. *Chief genera*: Marcgravia, Norantea.
- Marckea** (*Markea*) Rich. Solanaceae (4). 5 trop. Am.
- Marcuccia** Becc. Anonaceae (1). 1 Borneo.
- Mare's tail**, *Hippuris vulgaris* L.
- Marenteria** Thou. (*Uvaria* p.p.). Anonaceae (1). 1 Madag.
- Mareya** Baill. Euphorbiaceae (A. II. 2). 3 trop. W. Afr.
- Margaranthus** Schlechtend. Solanaceae (2). 3 S.W. U.S., Mexico.
- Margaretta** Oliv. Asclepiadaceae (II. 1). 2 E. Afr.
- Margaritopsis** Wright in Sauv. Rubiaceae (II. 5). 1 Cuba.
- Marginal** (plac.), in single cpls., on the margins of the cpls.
- Margosa**, *Melia Azadirachta* L.
- Margotia** Boiss. (*Elaeoselinum* p.p. *BH.*). Umbellif. (III. 7). 1 W. Medit.
- Margyricarpus** Ruiz et Pav. Rosaceae (III. 5). 3 Andes.
- Marialva** Vaud. = *Tovomita* Aubl. (Guttif.).
- Marianthus** Hueg. Pittosporaceae. 16 Austr.
- Marica** Ker-Gawl. Iridaceae (II). 10 trop. Am., Afr. Cult. orn. fl.
- Marigold**, *Calendula officinalis* L., (W.I.) *Wedelia*; **African** or **French** -, *Tagetes*; **bur** -, *Bidens*; **corn** -, *Chrysanthemum segetum* L.; **marsh** -, *Caltha palustris* L.
- Marila** Sw. Guttiferae (1). 5 W.I. to Peru.
- Marina** Liebm. Leguminosae (III. 6). 1 Mexico.
- Maripa** Aubl. Convolvulaceae (1). 9 trop. Am.
- Mariscus** Gaertn. = *Cyperus* L. p.p. (*Cyper.*).
- Maritimus** (Lat.), belonging to the sea.
- Marizia** Gandoger = *Daveaua* Willk. (Comp.).
- Marjoram**, *Origanum vulgare* L., &c.
- Markea** (*Marckea*) Rich. Solanaceae (4). 5 trop. Am.
- Markhamia** Seem. (*Dolichandrone* *BH.*). Bignoniaceae (2). 6 Afr., As.
- Marking nut**, *Semecarpus*.
- Marlea** Roxb. (*Alangium* p.p. *EP.*). Cornaceae. 6 Indomal.
- Marlierea** Cambess. Myrtaceae (1). 50 trop. S. Am. Fr. ed.
- Marlieriopsis** Kiaersk. (*Mitranthus* p.p. *EP.*). Myrtaceae (1). 1 S. Domingo.
- Marlothia** Engl. Rhamnaceae. 1 S. Afr.
- Marlothiella** H. Wolff. Umbelliferae (III. 5). 1 Namaqualand.
- Marmalade plum** (W.I.), *Lucuma mammosa* Gaertn.; - **tree**, *Vitellaria*.
- Marmoratus** (Lat.), with veins of colour.
- Marquesia** Gilg. Flacourtiaceae (5). 1 Angola.
- Marram grass**, *Ammophila arundinacea* Host.
- Marrow, vegetable**, *Cucurbita Pepo* L., var., *Blighia sapida* Kon.
- Marrubium** Tourn. ex L. Labiatae (VI). 30 Eur., N. Afr., temp. As. *M. vulgare* L., white horehound, in Brit., formerly officinal.
- Marsdenia** R. Br. Asclepiadaceae (II. 3). 80 trop. and subtrop.
- Marsea** Adans. = *Conyza* L. (Comp.).

Marsh betony, *Stachys palustris* L.; - **grass** (Am.), *Spartina*; - **mallow**, *Althaea officinalis* L.; - **marigold**, *Caltha palustris* L.; - **rosemary**, *Ledum*, (Am.) *Statice*.

Marshallia Schreb. Compositae (5). 5 S. U.S.

Marsilea L. Marsileaceae. 60 trop. and temp. Rhiz. bearing l. at the nodes, and roots on the lower side. L. petiolate with four lobes, resembling those of '4-leaved clover.' They 'sleep' at night like *Oxalis*. In some they are floating, on delicate petioles; others grow in shallow water, the l. standing erect. Some, e.g. *M. vestita* Hook. et Grev., vegetate during the wet season, and pass the dry in the form of sporocarps.

The sporocarp is a bean-like structure attached to the petiole of the l. by a stalk. It contains a number of sori, each forming a chamber reaching from the ventral to the dorsal edge of the sporocarp. In each sorus on the outer side is a placenta in the form of a ridge bearing micro-sporangia on its sides and mega-sporangia on the top. The latter contain one spore each. The sporocarp is very hard and may remain in water a long time without showing any effect. Ultimately however, or at once if the hard shell be injured, a swelling of the mucilaginous interior tissue bursts it. "As more water is absorbed, this gelatinous inner tissue continues to expand, and forms a long worm-shaped body to which are attached a number of sori, each surrounded by a sac-shaped indusium in which the sporangia are closely packed" (Campbell). The spores are finally set free by the dissolution both of indusium and sporangium wall. The prothalli are similar to those of *Salviniaceae*.

The sporocarps of some are eaten by the natives of Austr. (nardoo).

Marsileaceae. Filicales Leptosporangiatæ. A fam. of 2 gen., 65 sp. trop. and temp. Mature pl. aquatic or amphibious with thin creeping stem, growing by an apical cell, and bearing l. at distinct nodes. L. circinate in veneration like those of ordinary ferns, but varying much in type (see gen.). Roots are formed from the lower side of the stem.

Sporangia in sporocarps, which are complex structures not homologous with those of *Salviniaceae*. Each is the equivalent of a leaf-segment and encloses several sori, the latter composed both of micro- and mega-sporangia. Each spore is furnished with an epispore of hardened frothy mucilage. The spores pass the winter (or dry season) inside the sporangia. The subsequent stages in the life history resemble those of *Salviniaceae*. See gen. for details.

Classification :

Leaf with 4-partite blade ; sporocarp bean-shaped : *Marsilea*.

„ simple ; sporocarp spherical : *Pilularia*.

Marsippospermum Desv. (*Rostkovia* BH.). Juncaceae. 2 S. Am., N.Z.

Marssonina Karst. (*Napeanthus* BH.). Gesneriaceae (1). 1 Trinidad, Venezuela.

Marsypianthus Mart. ex Benth. Labiatae (VII). 3 warm Am.

Marsypopetalum Scheff. Anonaceae (2). 1 Java.

Martagon lily, *Lilium Martagon* L.

Martha Fr. Muell. (*Posoqueria* p.p.). Rubiaceae (1. 8). 1 Brazil.

Marthella Urb. (*Gymnosiphon* p.p.). Burmanniaceae. 1 Trinidad.

- Martia** (*Martiusia*) Benth. Leguminosae (II. 5). 2 trop. S. Am.
- Martinella** Baill. Bignoniaceae (1). 3 N. trop. S. Am.
- Martinella** Leveillé. Cruciferae (inc. sed.). 1 China.
- Martinezia** Ruiz et Pav. Palmaceae (IV. 2). 7 W.I., trop. S. Am.
- Martinia** Vaniot (*Asteromaea* p.p. *EP.*). Compositae (3). 1 China.
- Martiusia** (*Martix*) Benth. Leguminosae (II. 5). 2 trop. S. Am.
- Martretia** Beille. Euphorbiaceae (A. I. 1). 1 trop. Afr.
- Martynia** Houst. ex L. (*BH.* incl. *Proboscidea* Schmid.). Martyniaceae.
1 Mexico. Fls. with sensitive stigmas like Mimulus. The fr. has 2 long curved horns, suited for animal-distr.
- Martyniaceae** (*EP.*; *Pedaliaceae* p.p. *BH.*). Dicots. (Sympet. Tubiflorae). 2 gen., with 10 sp., trop. and subtrop. Am., in dry or coast regions. Herbs, often with tuberous roots, with opp. or alt. l. and term. racemes of ♂, 5-merous, † fls. K (5); C (5); A 4 with a std., epipet., didynamous; $\underline{G}$ (2), 1-loc. with parietal plac., and ∞ or few anatr. ovules. Caps. loculic., the outer pericarp soft and falling off, the inner woody; it is rendered more or less 4-loc. by the union of the T-shaped placentae together and to the endocarp. The tissue at the top of the midrib of each cpl. also becomes woody and forms a projecting spur, usually hooked at the end or curved, and serving for animal distr. Seeds with little endosp. *Genera*: Martynia, Craniolaria.
- Marumia** Blume. Melastomaceae (1). 15 Malaya.
- Marupa** Miers. Simarubaceae. 1 Brazil.
- Maruta** Cass. = *Anthemis* Mich. p.p. (Comp.).
- Marvel of Peru**, *Mirabilis Jalapa* L.
- Maryland pink root**, *Spigelia marilandica* L.
- Mascagnia** Bert. (*Hiraea* *BH.*). Malpighiaceae (1). 50 trop. Am.
- Mascarenhasia** A. DC. Apocynaceae (II. 1). 10 Madag., E. Afr.
M. elastica K. Sch. yields rubber.
- Maschalocephalus** Gilg et K. Schum. Rapateaceae. 1 trop. Afr.
- Maschalodesme** K. Schum. et Lauterb. Rubiaceae (I. 7). 1 New Guinea.
- Masdevallia** Ruiz et Pav. Orchidaceae (II. 8). 120 trop. Am., Mexico.
Petals small; sepals with long processes (Darwin, *Orchids*, p. 135).
- Masked**, personate.
- Massangea** F. Morren (*Caraguata* p.p. *BH.*). Bromeliaceae (1).
1 Colombia.
- Masseranduba**, *Mimusops elata* Allem.
- Massia** Bal. Gramineae (9). 1 Indomal.
- Massoia** Becc. Lauraceae (inc. sed.). 1 New Guinea.
- Massonia** Thunb. ex L. f. Liliaceae (V). 25 S. Afr.
- Massowia** C. Koch = *Spathiphyllum* Schott p.p. (Araceae).
- Massulae**, cf. *Azolla*.
- Mastersia** Benth. Leguminosae (III. 10). 1 Himalaya.
- Mastic**, *Pistacia Lentiscus* L.; **American -**, *Schinus molle* L.; **- tree** (W.I.),
Bursera gummiifera L.
- Mastixia** Blume. Cornaceae. 15 Indomal.
- Mat grass**, *Nardus stricta* L.
- Matayba** Aubl. (*Ratonia* p.p. *BH.*). Sapindaceae (1). 36 warm Am.
- Maté**, *Ilex paraguensis* A. St Hil.

- Matelea** Aubl. Asclepiadaceae (II. 4). 6 trop. S. Am.
Mathewsia Hook. et Arn. Cruciferae (3). 4 Chili, Peru, Bolivia.
Mathurina Balf. f. Turneraceae. 1 Rodriguez.
Matico, *Piper angustifolium* Ruiz et Pav. (Peru).
Matisia Humb. et Bonpl. Bombacaceae. 10 Colombia, Guiana.
Matonia R. Br. Matoniaceae. 2 Borneo and Malay Penins. Herbs with creeping rhiz. and dichotomously branched l. Sori not numerous, of 6—10 radially arranged sporangia, on convex recept., with umbrella-like indusium. Annulus complete, closed, oblique. Cf. Filicales, and Seward in *Phil. Trans.* B. 191 and *Nature*, March 1899, p. 525.
Matoniaceae. Filicales Leptosporangiatæ. Only genus *Matonia*, *q.v.*
Matricaria (Tourn.) L. Compositæ (7). 50 S. Afr., Eur., Medit., W. As.; 2 in Brit. (wild chamomile or feverfew), incl. *M. Chamomilla* L. (officinal dried fls.).
Matrimony vine (Am.), *Lycium*.
Mats, cf. *Andropogon*, *Bambos*, *Cocos*, *Phoenix*, *Scirpus*, &c.
Matsumurella Makino (*Leonurus* p.p.). Labiatae (VI). 1 Japan.
Matsumuria Hemsl. (*Rehmannia* p.p.). Scrophulariaceae (III. 1), perhaps better Gesneriaceae. 1 Formosa.
Mattipal, *Ailanthus malabarica* DC. (India).
Matteuccia Todaro. Polypodiaceae. 3 N. temp.
Matthaea Blume. Monimiaceae. 3 Malay Archipelago.
Matthiola R. Br. Cruciferae (4). 50 Medit., Eur., S. Afr. 2 in Brit. (stock) on the coasts, incl. *M. incana* R. Br., the parent sp. of the garden stock.
Mattia Schult. = *Rindera* Pall. (Borag.).
Mattiastrum Brand (*Paracaryum* p.p.). Boraginaceae (IV. 1). 25 Medit.
Mauloutchia Warb. (*Myristica* p.p.). Myristicaceae. 1 Madag.
Maundia F. Muell. (*Triglochin* L. p.p.). Scheuchzer. 1 Austr.
Mauneia Thou. (*Ludia* EP.). Inc. sed. 1 Madag.
Maurandia Orteg. Scrophulariaceae (II. 3). 6 Mexico. Leaf-climbers with sensitive petioles. Cult. orn. fl.
Mauria Kunth. Anacardiaceae (3). 8 Andes.
Mauritia L. f. Palmae (III). 9 trop. Am., W. Ind. (Moriche, see Kingsley's *At Last*). They furnish wood, wine, fruit, fibre, &c.
Mauritius grass, *Panicum molle* Sw.; - **hemp**, *Furcraea gigantea* Vent.
Maurocenia L. (*Cassine* p.p.). Celastraceae. 1 S. Afr., *M. capensis* Sond. (Hottentot cherry).
Maw seed, opium seed.
Maxillaria Ruiz et Pav. Orchidaceae (II. 18). 110 trop. Am.
Maximiliania Mart. Palmae (IV. 2). 3 trop. S. Am., W.I.
Maximiliana Mart. et Schrank (*Cochlospermum* p.p.). Cochlosp. 13 trop.
Maximowiczia Cogn. Cucurbitaceae (2). 2 Mexico, S.W. U.S.
Maximus (Lat.), very large.
Maxwellia Baill. Bombacaceae. 1 New Caledonia.
May, *Crataegus*; - **apple** (Am.), *Podophyllum*; - **flower**, *Epigaea*.
Mayaca Aubl. Mayacaceae. 7 Am. Marsh herbs with alt. linear l. and sol. or umbellate fl., ♀, reg. 3-merous. A 3, G (3), 1-loc. with few orthotr. ov. caps.

- Mayacaceae.** Monocots. (Farinosae; Coronarieae *BH.*). Only gen. *Mayaca*, *q.v.*
- Mayepea** Aubl. (*Linociera* Sw.). Oleaceae. 50 trop. and subtrop.
- Mayna** Aubl. (*Oncoba* p.p. *BH.*). Flacourtiaceae (2). 8 trop. S. Am.
- Mayodendron** Kurz. Bignoniaceae (2). 1 Burma.
- Maytenus** Molina. Celastraceae. 75 S. Am.
- Mazus** Lour. Scrophulariaceae (II. 6). 10 China to Austr.
- Meadow beauty** (Am.), *Rhexia*; - **crane's bill**, *Geranium pratense* L.; - **crocus**, *Colchicum autumnale* L.; - **grass**, *Poa*; - **rue**, *Thalictrum*; - **saffron**, *Colchicum autumnale* L.; - **sweet**, *Ulmaria palustris* Moench.
- Mealies** (S. Afr.), Indian corn, *Zea Mays* L.
- Mearnsia** Merrill. Myrtaceae (II. 2). 1 Phil. Is.
- Mechanisms, floral**, *cf.* Floral Mechanisms.
- Mechowia** Schinz. Amarantaceae (2). 1 S.W. Afr.
- Mecomischus** Coss. ex Benth. et Hook. f. Compositae (7). 1 Algeria.
- Meconella** Nutt. (*Platystigma* Benth.). Papaver. (II). 5 Pac. N. Am.
- Meconopsis** Vig. Papaveraceae (II). 15 N. temp. *M. cambrica* Vig., the Welsh poppy, in Brit. Cult. orn. fl.
- Mecopus** Bennett. Leguminosae (III. 7). 1 Java.
- Mecranium** Hook. f. Melastomaceae (1). 8 W.I.
- Medemia** Princeps Gulielmus de Wurtemberg et A. Br. Palmaceae (II). 4 E. Afr.
- Medeola** Gronov. ex L. Liliaceae (VII). 1 N. Am.
- Medial**, central, middle.
- Medica** Tourn. ex L. = *Medicago* Tourn. (Legum.).
- Medicago** Tourn. ex L. Leguminosae (III. 4). 50 Eur., Medit., S. Afr.; 6 in Brit. (medick, nonsuch, burweed). The fl. has an explosive mech. like *Genista* (*q.v.*). The fr. is usu. twisted, often spirally coiled up into a ball or disc, and frequently provided with hooks enabling animal distr. *M. sativa* L. (lucerne or alfalfa), *M. lupulina* L., and others, are useful fodders.
- Medicosma** Hook. f. Rutaceae (1). 1 E. Austr.
- Medinilla** Gaudich. Melastomaceae (1). 120 palaeotrop.
- Medinillopsis** Cogn. Melastomaceae (1). 2 Malaya.
- Mediocalcas** J. J. Smith (*Cryptochilus* p.p. *EP.*). Orchid. (II. 5). 2 Mal.
- Mediterranean region**, the region round the Medit. Sea, including the Sahara, Egypt, N. Arabia to the Panjab, Asia Minor, the Balkans, Italy, and Spain.
- Medlar**, *Pyrus germanica* Hook. f.
- Medulla**, pith.
- Medusagyne** Baker. Guttiferae (inc. sed.) (Ternstr. *BH.*). 1 Seychelles.
- Meehan** Britton (*Cedronella* p.p.). Labiatae (VI). 1 E. U.S.
- Mega-** (Gr. pref.), large; - **sporangium**, - **spore**, the larger when there are two kinds, *Pteridophyta*.
- Megabaria** Pierre ex De Wild. Euphorbiaceae (A. I. 1). 2 trop. Afr.
- Megacarpaea** DC. Cruciferae (2). 5 C. As., China. Sta. > 6 in some.
- Megacaryon** Boiss. Boraginaceae (IV. 5). 1 W. As.
- Megaclinium** Lindl. Orchidaceae (II. 16). 20 trop. and subtrop. Afr. Cult.

- Megadenia** Maxim. Cruciferae (2). 1 China.
Megalachne Steud. Gramineae (10). 1 Juan Fernandez.
Megalochlamys Lindau. Acanthaceae (IV. B). 2 Afr.
Megalodonta Greene (*Bidens* p.p.). Compositae (5). 3 N. Am.
Megalopus K. Schum. Rubiaceae (II. 5). 1 Cameroons.
Megalostylis Sp. Moore. Euphorbiaceae (A. II. 2). 1 Upper Amazon.
Megaphyllaea Hemsl. Meliaceae (III). 1 Perak.
Megapterium Spach (*Oenothera* p.p. *BH.*). Onagraceae (2). 3 Missouri valley. Cult. orn. fl.
Megarrhiza Torr. et Gray = *Echinocystis* Torr. p.p. (Cucurb.).
Megaskepasma Lindau. Acanthaceae (IV. B). 1 Venezuela.
Megastachya Beauv. = *Eragrostis* Beauv. p.p. (Gram.).
Megastigma Hook. f. Rutaceae (I). 2 Mexico, Guatemala.
Megastyles Schlechter. Orchidaceae (II. 2). 7 Indomal.
Megistostegium Hochr. (*Macrocalyx* Cost. et Poiss.). Malvaceae (4). 1 Madag.
Megistostigma Hook. f. Euphorbiaceae (A. II. 2). 1 Malacca.
Meibomia Heist. ex Adans. (*Desmodium* p.p.). Legumin. (III. 7). 6 Am.
Meiocarpidium Engl. et Diels (*Uvaria* p.p.). Anonaceae (I). 2 W. Afr.
Meiogyne Miq. (*Unona* p.p. *BH.*). Anonaceae (4). 2 trop. As.
Meionectes R. Br. Haloragidaceae. 1 S. Austr., Tasm.
Meiracyllium Reichb. f. Orchidaceae (II. 6). 2 Mexico.
Mela-, melano- (Gr. pref.), black.
Meladendron Molina. Solanaceae (inc. sed.). 1 Chili.
Melalema Hook. f. Compositae (8). 1 Patagonia.
Melaleuca L. Myrtaceae (II. 1). 100 Austr. 1 to India. The l. of *M. Leucadendron* L. (Austr., Indomal.) yield Cajeput oil. Sta. in antepet. bundles. Several yield oil; timber useful.
Melampodium L. Compositae (5). 25 Am.
Melampyrum (Tourn.) L. Scrophulariaceae (III. 3). 35 N. temp.; 4 in Brit. (cow-wheat). Semi-parasites (see fam.). The fl. has a loose-pollen mechanism; the 4 anthers lie close together and form a pollen-box; the filaments of the sta. are covered with sharp teeth.
Melananthos Pohl. Inc. sed. Nomen.
Melananthus Walp. Solanaceae (5). 2 Brazil, C. Am.
Melancium Naud. Cucurbitaceae (2). 1 E. and S. Brazil.
Melandrium Roehl (*Lychnis* p.p. *BH.*). Caryophyllaceae (II. 1). 60 ✱, S. Afr., S. Am. *M. rubrum* Garck. (*Lychnis dioica* L.) is dioec. and the ♀ pl. is stouter and coarser in growth than the ♂.
Melanobatus Greene (*Rubus* p.p.). Rosaceae (III. 2). 7 N. Am.
Melanocenchris Nees. Gramineae (II). 3 trop. As. and Afr.
Melanochyla Hook. f. Anacardiaceae (4). 4 Malaya.
Melanococca Blume. Rutaceae (inc. sed.). 1 New Guinea.
Melanodendron DC. Compositae (3). 1 St Helena. Tree.
Melanodiscus Radlk. Sapindaceae (I). 2 trop. Afr.
Melanophylla Baker. Cornaceae. 3 Madag.
Melanopsidium Cels. (*Billiottia* p.p. *BH.*). Rubi. (I. 8). 1 Rio de Janeiro.
Melanorrhoea Wall. Anacardiaceae (1). 6 Malaya. *M. usitata* Wall. (Theetsee) yields a valuable black varnish, obtained by tapping the stem; the sap turns black on exposure to air.

- Melanosciadium** Boiss. Umbelliferae (III. 5). 1 China.
Melanoselinum Hoffm. (*Thapsia* p.p. *BH.*). Umbelliferae (III. 7).
 2 Madeira.
Melanoseris Decne. = *Lactuca* Tourn. (Comp.).
Melanotis Neck. Inc. sed. Nomen.
Melanoxylon Schott. Leguminosae (II. 8). 1 S.E. Brazil, *M. Brauna* Schott (*Brauna*). Timber useful.
Melanthera Rohr. Compositae (5). 20 Afr., Madag., Am.
Melanthesa Blume = *Breynia* Forst. (Euph.).
Melanthium Clayton ex L. Liliaceae (1). 3 N. Am.
Melasma Berg. Scrophulariaceae (III. 2). 25 Am., Afr., Madag.
Melasphaerula Ker-Gawl. Iridaceae (III). 1 Cape Colony.
Melastoma Burm. ex L. Melastomaceae (1). 40 As., trop. and E.
Melastomaceae (*EP.*, *BH.*). Dicotyledons (Archichl. Myrtiflorae; Myrtales, *BH.*). 150 gen., 2500 sp., trop. and subtrop. A very natural family, usu. easy to recognize, even when not in fl., by the peculiar leaf-veining, &c. The habit differs much, as they exist under varied conditions. Some are herbs, others trees or shrubs; some climb, usu. by roots; some are epiph., water or marsh pl. L. nearly always decussate (stem often 4-angled), but one l. generally much larger than the other; the lesser in some cases withers away as it grows older, and drops off. The veins of the l., which is usu. simple and entire or nearly so, diverge from the base and converge again at the apex, as in many monocot. l., so that there is no true midrib. Many are myrmecophilous, e.g. *Tococa*, *Maieta*, &c. (*q.v.*).

Infl. cymose, but in great variety. Fl. usu. very char., easily recognized by the curious appendages of the anthers. Recept. ('calyx-tube') tubular or bell-shaped, commonly $\pm$ united with the ovary, often brightly coloured. K 4 or 5; C 4 or 5, perig.; P. usu. reg., but irregularity often occurs in the A. Sta. usu. twice as many as petals, standing (when mature) in one whorl, bent down in bud so that the anthers come between the ovary and the recept.; the anther-loculi open by a common apical pore. The connective is developed in various ways and usu. provided with curious appendages, frequently of sickle-like form, giving a char. aspect to the fl. G. sup. or inf., usu. 4—5-loc., with a simple style and stigma: ovules ∞ , anat., on axile plac. Fr. a berry or loculic. caps. Seed exalbum.; one cot. larger than the other. The M. are of little economic importance; a few yield colouring matters.

Classification and chief genera (after Krasser):

A. Fruit many-seeded. Embryo very small.

I. *MELASTOMATOIDEAE* (ovules on slightly projecting placentae in inner angle of loc.): *Tibouchina*, *Centradenia*, *Melastoma*, *Monochaetum*, *Medinilla*, *Leandra*, *Miconia*, *Tococa*, *Maieta*.

II. *ASTRONIOIDEAE* (ovules on a placenta at base or on wall of loc.): *Kibessia*.

B. Fruit 1—5-seeded. Embryo large.

III. *MEMECYLOIDEAE*: *Memecylon*.

Meleagrinx Arruda. Inc. sed. 1 Brazil.

Melegueta pepper, *Anomum melegueta* Roscoe.

Mel-grass, *Ammophila arundinacea* Host.

Melhania Forsk. Sterculiaceae. 25 Afr., As., Austr.

Meliadelpha Radlk. Meliaceae (inc. sed.). 2 Polynesia.

Melia L. (BH. incl. *Azadirachta* A. Juss. q.v. for *M. Azadirachta* L., the nim). Meliaceae (III). 12 palaeotrop. Some useful for timber. *M. Azedarach* L., the beadtrees, cult. for its fls.

Meliaceae (EP., BH.). Dicots. (Archichl. Geraniales). 40 gen., 600 sp., trop. and sub trop. Mostly trees and shrubs, with alt. exstip. pinnate l., and cymose panicles of ♂ reg. fls. K (4—5) or 4—5; C 4—5; A 8—10 usu. united below into a tube, or sometimes united all their length, in which case the anthers are sessile on the tube; disc present or not; G 2—5-loc. or rarely 1-loc. or more than 5-loc.; style present or not; ov. in each loc. 1, 2, or more, usu. pend. and anatr., with ventral raphe. Capsule, berry, or drupe; seeds often winged, with endosp. Many, e.g. *Swietenia* (mahogany), *Cedrela*, &c., yield valuable timber; the seeds of several are used as sources of oils; others have ed. fr.

Classification and chief genera (after Engler):

I. **CEDRELOIDEAE** (sta. free): *Cedrela*, *Pteroxylon*.

II. **SWIETENIOIDEAE** (sta. in a tube; seeds winged): *Swietenia*, *Khaya*.

III. **MELIOIDEAE** (sta. in a tube; seeds not winged): *Carapa*, *Melia*, *Azadirachta*, *Trichilia*, *Guarea*.

Melanthaceae (EP.; *Sapindaceae* p.p. BH.). Dicots. (Archichl. Sapindales). 3 gen., 17 sp., Afr. (trop. and S.). Trees and shrubs with alt. usu. stip. l., and racemes of ♂, median-zygom. fls., whose stalks twist through 180° at the time of flowering. K 5 or (5), sometimes 4 by union of two sepals; C 4 or 5; disc extra-staminal; A 5 or 4 or 10, free or united at base; G (4—5), 4—5-loc. with one basal or many axile ov. in each loc.; ovules erect or pend., anatr. with ventral or dorsal raphe according as they are erect or pendulous respectively. Capsule; seed sometimes with aril; endosp. fleshy or horny. *Chief genus*: *Melanthus*.

Melanthus L. Melanthaceae. 5 S. Afr. Fls. very rich in honey.

Melica L. Gramineae (10). 40 temp., exc. Austr.; 2 in Brit. (melic-grass).

Melic-grass, *Melica*.

Melichrus R. Br. (*Styphelia* p.p. EP.). Epacridaceae (3). 2 Austr.

Melicocca L. Sapindaceae (1). 2 trop. Am., W.I. *M. bijuga* L. (W.I.) for timber and fr.

Melicope Forst. Rutaceae (1). 12 trop. As., warm Austr.

Melicytus Forst. Violaceae. 4 New Zealand, Norfolk I.

Melientha Pierre. Opiliaceae. 1 Cambodia.

Melilot, *Melilotus*.

Melilotus Tourn. ex Hall. Leguminosae (III. 4). 20 temp. and sub trop. |*. 3 in Brit. (melilot). The fls. contain much honey, and are visited by bees.

Melinia Decne. in DC. Asclepiadaceae (II. 1). 6 E. temp. S. Am.

Melinis Beauv. Gramineae (4). 5 trop. S. Am., Afr., Madag. Fodder.

Melioschinzia K. Schum. (*Chisocheton* p.p. EP.). Melia. (III). 1 N.G.

Meliosma Blume. Sabiaceae. 55 trop. and sub trop. As. and Am.

- Melissa** Tourn. ex L. Labiatae (VI). 4 Eur., W. As. *M. officinalis* L. (balm) cult.
- Melittacanthus** Sp. Moore. Acanthaceae (IV. B). 1 Madagascar.
- Melitella** Sommier. Compositae (13). 1 Malta.
- Melittis** L. Labiatae (VI). 1 Eur. (incl. Brit.), *M. Melissophyllum* L., the bastard-balm.
- Mellera** Sp. Moore. Acanthaceae (IV. A). 3 trop. E. Afr.
- Melleus** (Lat.), of honey colour or taste.
- Mellichampia** A. Gray. Asclepiadaceae (II. 1). 1 Mexico.
- Melliniella** Harms. Leguminosae (III. 7). 1 E. trop. Afr.
- Mellissia** Hook. f. Solanaceae (2). 1 St Helena.
- Melloa** Bur. Bignoniaceae (1). 2 Brazil, Venezuela.
- Melo** (Tourn.) L. = *Cucumis* Tourn. (Cucurb.).
- Melocactus** (Tourn.) Link et Otto. Cactaceae (III. 1). 30 W.I., S. Am. Ribbed plants, like *Cereus*. Fls. produced at the top.
- Melocalamus** Benth. Gramineae (13). 1 Burma.
- Melocanna** Trin. Gramineae (13). 1 Indomal. Exalbum. seed ed.
- Melochia** Dill. ex L. Sterculiaceae. 60 trop.
- Melochia** Rottb. Inc. sed. 1 Guiana.
- Melodinus** Forst. Apocynaceae (I. 1). 25 Indomal., Polynesia.
- Melodorum** Hook. f. et Thoms. Anonaceae (4). 30 palaeotrop.
- Melolobium** Eckl. et Zeyh. Leguminosae (III. 3). 12 S. Afr.
- Melon**, *Cucumis Melo* L.; - **cactus**, *Melocactus*; - **thick** (W.I.), *Melocactus*; -, **water**, *Citrullus vulgaris* Schrad.; -, **white gourd**, *Benincasa cerifera* Savi.
- Melosperma** Benth. Scrophulariaceae (II. 6). 1 Chili.
- Melothria** L. Cucurbitaceae (2). 60 trop. and sub trop.
- Membranous** (1.), thin, dry, not green, flexible.
- Memecylanthus** Gilg et Schlechter. Caprifoliaceae. 1 New Caled.
- Memecylon** L. Melastomaceae (III). 120 palaeotrop.
- Memora** Miers (*Adenocalymma* p.p. BH.). Bignoniaceae (1). 20 S. Am.
- Memorialis** Buch.-Ham. (*Pouzolzia* p.p. BH.). Urtic. (3). 13 Indomal.
- Menabea** Baill. Asclepiadaceae (II. 2). 1 Madagascar.
- Menais** Loeff. Inc. sed. 1 S. Am.
- Menaphronocalyx** Pohl. Inc. sed. Nomen.
- Mendoncia** Vell. Acanthaceae (II). 24 trop. Am.
- Mendozia** Ruiz et Pav. = *Mendoncia* Vell. (Acanth.).
- Menepetalum** Loes. Celastraceae. 5 New Caledonia.
- Menestoria** DC. Rubiaceae. Genus delendum; farrago.
- Meniscium** Schreb. = *Dryopteris* Adans. (Polypod.).
- Meniscoid**, watch-glass-shaped.
- Menispermaceae** (EP., BH.). Dicots. (Archichl. Ranales). 63 gen., with 360 sp., trop. and warm temp. Mostly climbing shrubs with alt. simple l., in whose axils are usu. serial buds. The stem-anatomy is of interest. Fls. in axillary racemes (exc. *Cissampelos*, &c.), unisexual, usu. dioec. Formula usu. K 3+3, C 3+3, A 3+3, G 3, but many exceptions. K and A often > 6; sometimes only 1 cpl. Ovules 1 in each cpl., ventral, pend., semi-anatr. Achene; seed album. The classification of the genera is largely based on the structure of

the seed. A few are or have been medicinal, on account of the bitter principle in the roots. *Chief genera*: Menispermum, Cocculus, Cissampelos, Jateorhiza, Tinospora, Anamirta.

Menispermum (Tourn.) L. Menispermaceae. 3 temp. E. As., Atl. N. Am. (moon-seed).

Menkea Lehm. Cruciferae (3). 2 Austr.

Menodora Humb. et Bonpl. Oleaceae. 15 warm Am., Afr.

Menonvillea R. Br. Cruciferae (1). 4 Chili, Peru.

Mentha (Tourn.) L. Labiatae (VI). 15 |*. 6 in Brit. (mint), incl. *M. piperita* L. (peppermint), *M. Pulegium* L. (penny-royal). From the former an oil is obtained by distillation and used in medicine, &c. *M. viridis* L. is cultivated as a pot-herb for flavouring.

Menthol, a substance extracted from oil of peppermint, &c.

Mentum, a chin, *cf.* *Orchidaceae*.

Mentzelia Plum. ex L. (*BH.* incl. *Eucnide* Zucc.). Loasaceae. 55 warm Am. No stinging hairs. In some the outer sta. are sterile.

Menyanthes (Tourn.) L. Gentianaceae (II). 1 N. temp. (incl. Brit.), *M. trifoliata* L., the buck- or bog-bean. A bog plant with creeping rhiz. and alt. l. Fls. dimorphic heterostyled (*cf.* *Primula*). The rhizome has bitter tonic properties.

Menziesia Sm. Ericaceae (I. 2). 7 N. temp. [*M. polifolia* Juss. = *Daboecia polifolia*.]

Meoschium Beauv. = *Ischaemum* L. p.p. (Gram.).

Mephitidia Reinw. ex Blume = *Lasianthus* Jack. (Rubi.).

Merathrepta Rafin. (*Danthonia* p.p.). Gramineae (9). 9 N. Am.

Merciera A. DC. Campanulaceae (I). 4 S. Afr.

Merckia Fisch. (*Arenaria* p.p. *BH.*). Caryophyll. (I. 1). 1 N.E. As., N.W. Am.

Mercurialis (Tourn.) L. Euphorbiaceae (A. II. 2). 7 Medit., Eur., E. As. 2 in Brit., *M. perennis* L. and *M. annua* L. (mercury). Dioec. anemoph. fls. Veg. repr. by rhizomes. C absent. Cpls. (2).

Mercury, *Mercurialis*.

Merendera Ram. Liliaceae (I). 10 Medit., Abyssinia.

Meretricia Neraud. Rubiaceae. Nomen.

Meriandra Benth. Labiatae (VI). 2 Himalaya, Abyssinia.

Meriania Sw. Melastomaceae (I). 30 W.I., trop. Am.

Mericarp, the one-seeded portion of a schizocarp, *Umbelliferae*.

Mericarpaea Boiss. Rubiaceae (II. 11). 1 W. As.

Meringurus Murbeck. Gramineae (12). 1 Tunis.

Merinthopodium Donnell Smith. Solanaceae (4). C. Am.

Merinthosorus Copeland (*Acrostichum* p.p.). Polypodiaceae. 1 Phil. Is.

Meriolix Rafin. (*Oenothera* p.p. *BH.*). Onagraceae (2). 3 temp. N. Am.

Merism, repetition of parts to form a symmetry or pattern.

Merismatic, **meristemetic**, of dividing and growing cells.

Meristostylis Klotzsch (*Kalanchoe* Adans. p.p. *EP.*). Crassulaceae (*Gentianaceae BH.*). 3 trop. Afr.

Merkusia de Vriese = *Scaevola* L. p.p. (Gooden.).

Mermaid weed (Am.), *Proserpinaca*.

Merostachys Spreng. Gramineae (13). 10 S. Am.

Merremia Dennst. (*Batatas*, *Convolvulus*, *Ipomoea* p.p.). Convolvulaceae (1). 50 trop. and subtrop.

- Merrittia** Merrill (*Senecio* p.p.). Compositae (8). 1 Phil. Is.
- Mertensia** Roth. Boraginaceae (iv. 4). 30 N. temp. 1 in Brit., *M. maritima* S. F. Gray (gromwell), on sea-coasts.
- Meryta** Forst. Araliaceae (1). 15 New Caled., New Zealand, Polynesia.
- Mesadenia** Rafin. (*Senecio* p.p.). Compositae (8). 10 N. Am.
- Mesanthemum** Koern. Eriocaulonaceae. 3 Madag., trop. W. Afr.
- Mescal**, *Agave*.
- Mesechites** Muell.-Arg. = *Echites* L. (Apocyn.).
- Mesembryanthemum** Dill. ex L. Aizoaceae (11). 350 S. Afr. Xero. of the most pronounced kind with very succulent l., usu. closely packed together; the young l. stand face to face at the growing apex till well grown, and thus protect the young bud. In *M. obconellum* Haw. the pairs of l. are congenitally united into a fleshy body with a little slit in the centre. Several have thorns, sometimes fl.-stalks hardened after the fall of the fl., sometimes branches, as in *M. spinosum* L. (the leafy branches appear below these in the next year, in the same axils). Fls. usu. term. on the stems, sol. or in dichasia or cincinni. Outer sta. (due to branching) repres. by numerous petaloid stds., having the appearance of a C. The mature ovary is 5-loc. with parietal plac.; this peculiar feature is due to an excessive growth of the peripheral tissue during development, which gradually turns the loculi completely over (*cf.* *Punica*). Fr. a caps. which opens only in moist air, contrary to the usual wont of capsules. Some, *e.g.* *M. edule* L. (Hottentot fig), contain an ed. pulp. *M. crystallinum* L. is the ice-plant, so called because its l. are covered with small glistening bladder-shaped hairs.
- Mesc-** (Gr. pref.), middle-; **-carp**, the middle part of a fr. wall; **-chil**, of a lip; **-phyll**, of a leaf; **-phytes**, average plants, suited to a fairly and continuously moist climate.
- Mesochlaena** R. Br. Polypodiaceae. 1 Malaya, Polynesia.
- Mesogyne** Engl. Moraceae (1). 2 trop. Afr.
- Mesomelaena** Nees (*Gymnoschoenus* Nees). Cyperaceae (11). 2 Austr.
- Mesona** Blume. Labiatae (vii). 3 E. Indomal.
- Mesopanax** R. Viguier = *Schefflera*, &c. p.p. (Aral.).
- Mesoptera** Hook. f. Rubiaceae (11. 1). 1 Malay Peninsula.
- Mesoreanthus** Greene (*Streptanthus* p.p.). Cruciferae (1). 1 Calif.
- Mesosphaerum** P. Br. = *Hyptis* Jacq. (Labi.).
- Mesospinidium** Reichb. f. (*Odontoglossum* p.p. *BH.*). Orchidaceae (11. 19). 4 C. Am. to Brazil.
- Mespilodaphne** Nees = *Ocotea* Aubl. p.p. (Laur.).
- Mespilus** (Tourn.) L. (*Pyrus* Tourn. p.p. *BH.*). Rosaceae (11). 40 N. temp. *M. germanica* L. is the medlar (ed. fr.). *M. Oxyacantha* Crantz, see *Crataegus*.
- Mesquite grass**, *Bouteloua*; **- tree**, *Prosopis juliflora* DC.
- Messersmidia** L. = *Tournefortia* L. (*BH.*) = *Heliotropium* L. (Borag.).
- Mesua** L. Guttiferae (iv). 3 India, Java. *M. ferrea* L. (Na or iron-wood) yields a valuable timber; its fls. are used in perfumery.
- Metabolism**, the chemical changes going on in the elaboration of food.
- Metabolos** Blume = *Hedyotis* L. (*BH.*) = *Oldenlandia* L. (Rubi.).
- Metalasia** R. Br. Compositae (4). 20 S. Afr.
- Metalepis** Griseb. Asclepiadaceae (11. 4). 1 Cuba.

- Metamorphosis**, change of form and structure, whether ontogenetic as in *Astragalus*, *Geum*, or phylogenetic.
- Metanarthecium** Maxim. Liliaceae (I). 1 Japan.
- Metaplexis** R. Br. Asclepiadaceae (II. 1). 3 E. As.
- Metaporana** N. E. Brown. Convolvulaceae (I). 2 trop. Afr.
- Metastelma** R. Br. Asclepiadaceae (II. 1). 50 trop. Am.
- Metharme** Phil. Zygophyllaceae. 1 Chili.
- Metopium** (P. Br.) Engl. Anacardiaceae (3). 2 W.I. Yields a purging resin (doctor gum) from the stem.
- Metrodorea** A. St Hil. (*Esenbeckia* BH.). Rutaceae (I). 5 Rio de Janeiro.
- Metrosideros** Banks. Myrtaceae (II 2). 20 S. Afr., Sunda Is., Austr., Polynes. Some furnish useful timber.
- Metroxylon** Rottb. Palmae (III). 7 Siam to New Guinea. *M. Rumphii* Mart. and *M. laeve* Mart. are the sago palms, cult. in Malaya. Small trees whose stems die after producing their large term. monoc. infls. (cf. *Corypha*, &c.), but form rhiz. branches below. The fr. takes 3 years to ripen. The tree is cut down when the infl. appears, and the sago is obtained from the pith by crushing and washing.
- Mettenia** Griseb. Euphorbiaceae (A. II. 6). 2 Jamaica, Cuba.
- Metteniusa** Karst. Icacinaceae. 1 Colombia.
- Metternichia** Mikan. Solanaceae (4). 3 Brazil, Colombia.
- Meu**, *Meum athamanticum* Jacq.
- Meum** (Tourn.) Adans. Umbelliferae (III. 5). 1 Eur. (incl. Brit.), *M. athamanticum* Jacq. (meu or bald-money).
- Mexican aloe**, - fibre, *Agave*; - poppy, *Argemone mexicana* L.; - rubber, *Castilleja elastica* Cerv.; - sunflower, *Tithonia diversifolia* A. Gray; - tea, *Chenopodium anthelminticum* L.
- Meyenia** Nees (*Thunbergia* p.p. BH.). Acanthaceae (III). 1 Indomal.
- Meyeria** DC. = *Calea* L. p.p. (Comp.).
- Mezereon**, *Daphne Mezereum* L.
- Mezia** Schwacke. Malpighiaceae (I). 1 Minas Gerães.
- Meziella** Schindler. Haloragidaceae. 1 Austr.
- Mezilaurus** O. Ktze. (*Silvia* Allem). Lauraceae (II). 2 Brazil.
- Mezoneurum** Desf. Leguminosae (II. 7). 12 palaeotrop.
- Mezzettia** Becc. Anonaceae (I). 3 Malaya.
- Mezzettiopsis** Ridl. Anonaceae (I). 1 Borneo.
- Mi**, *Bassia longifolia* L.
- Mibora** Adans. Gramineae (8). 1 W. Eur. (incl. Brit.).
- Michaelmas daisy**, *Aster*.
- Michauxia** L'Hérit. Campanulaceae (I). 6 E. Medit. Fl. 7—10-merous throughout. Cult. orn. fl.
- Michauxia** Raeschel. Inc. sed. 1, habitat?
- Michelia** L. Magnoliaceae. 15 trop. As., China. There is a gynophore between sta. and cpls. *M. Champaca* L. is cult. for its perfumed fl., used as offerings. Several yield useful timber.
- Micheliella** Briquet (*Collinsonia* p.p.). Labiatae (VI). 2 S.E. U.S.
- Micholitzia** N. E. Brown. Asclepiadaceae (II. 3). 1 India.
- Michoxia** Vell. Inc. sed. 1 Brazil.
- Miconia** Ruiz et Pav. (*Tamonea* Aubl.). Melastomaceae (I). 600 trop. Am., W.I.

- Micractis** DC. Compositae (5). 1 Madagascar.
Micradenia Miers = *Dipladenia* A. DC. (Apocyn.).
Micraea Miers. Inc. sed. 1 Chili. Nomen.
Micraira F. Muell. Gramineae (9). 1 Queensland.
Micrampelis Rafin. (*Sicyos* p.p.). Cucurbitaceae (4). 10 N. Am.
Micrandra Benth. in Hook. Euphorbiaceae (A. II. 3). 3 Brazil.
Micranthemum Michx. Scrophulariaceae (II. 6). 16 warm Am.
Micranthes Haw. (*Saxifraga* p.p.). Saxifragaceae (I). 50 N. Am.
Micrantheum Desf. Euphorbiaceae (B. I). 2 Austr.
Micranthus Eckl. Iridaceae (III). 2 Cape Colony.
Micranthus Wendl. (*Phaylopsis* BH.). Acanthaceae (IV. A). 12 palaeotrop.
Micranthus (Lat.), small-flowered.
Micrargeria Benth. in DC. Scrophulariaceae (III. 2). 3 E. Afr., India.
Micrasepalum Urb. (*Borreria* p.p.). Rubiaceae (II. 10). 1 Cuba.
Microchites Miq. Apocynaceae (II. 1). 5 E. Indomal.
Microembryae (BH.). The 4th series of Incompletae.
Micro (Gr. pref.), small; **-millimetre**, $\frac{1}{1000}$ mm., denoted by μ ; **-pyle**, the opening at the top of the ovule; **-sporangium**, **-spore**, **-sporophyll**, *Pteridophyta*, *Selaginella*.
Microbahia Cockerell (*Actinolepis* p.p.). Compositae (6). 1 Colorado.
Microbambus K. Schum. (*Guadua* Franch.). Gramineae (13). 1 trop. Afr.
Microbignonia Kränzlin. Bignoniaceae (2). 1 Peru.
Microcachrys Hook. f. Coniferae (Taxac. 2; see C. for gen. chars.). 1 Tasm. Dioec. Fr.-scales fleshy, not united. Seed arillate.
Microcala Hoffm. et Link. Gentianaceae (I). 2, 1 Am., the other Medit. and W. Eur. (incl. south-west England and Ireland).
Microcalamus Franch. Gramineae (13). 1 Congo.
Microcalamus Gamble = *Bambusa* Schreb. p.p. (Gram.).
Microcarpaea R. Br. Scrophulariaceae (II. 6). 1 E. As., Austr.
Microcasia Becc. (*Bucephalandra* BH.). Araceae (V). 2 Borneo.
Microcharis Benth. Leguminosae (III. 6). 4 trop. and S. Afr.
Microchloa R. Br. Gramineae (11). 4 Afr., one cosmotrop.
Microchonea Pierre. Apocynaceae (II. 2). 1 Cochinchina.
Microcitrus Swingle. Rutaceae (V). 3 Austr.
Microcnemum Ung.-Sternb. Chenopodiaceae (A). 1 Spain.
Micrococca Benth. Euphorbiaceae (A. II. 2). 1 trop. As., Afr.
Microcodon A. DC. Campanulaceae (I). 4 S. Afr.
Microcorys R. Br. Labiatae (II). 15 S.W. Austr.
Microcos Burm. ex L. = *Grewia* L. p.p. (Tili.).
Microcybe Turcz. Rutaceae (I). 3 Austr.
Microcycas A. DC. Cycadaceae (q.v.). 1 Cuba.
Microdactylon T. S. Brandege. Asclepiadaceae (II. 1). 1 Mexico.
Microdesmis Hook. f. Euphorbiaceae (A. II. 5). 3 trop. Afr., As.
Microdon Choisy. Scrophulariaceae (II. 7) (*Selag.* BH.). 4 S. Afr.
Microdracoides Hua. Cyperaceae (III). 1 trop. Afr.
Microglossa DC. Compositae (3). 10 trop. As. and Afr.
Microgynoecium Hook. f. Chenopodiaceae (A). 1 Tibet.
Microkentia H. Wendl. ex Benth. et Hook. f. (*Cyphokentia* p.p. EP.). Palmaceae (IV. 1). 5 New Caledonia.

- Microlaena** R. Br. Gramineae (7). 5 Austr., New Zealand.
Microlecane Sch.-Bip. Compositae (5). 1 Abyssinia.
Microlepis Miq. Melastomaceae (1). 4 S. Brazil.
Microlespedeza Makino (*Lespedeza* p.p.). Legum. (III. 7). 2 Japan.
Microlicia D. Don. Melastomaceae (1). 100 trop. S. Am.
Microlobius Presl. Leguminosae (inc. sed.). 1 Mexico.
Microloma R. Br. Asclepiadaceae (II. 1). 8 S. Afr.
Microlonchoides Candargy (*Centaurea* p.p. *EP*). Comp. (II). 1 Greece.
Microlonchus Cass. = *Centaurea* L. p.p. (Comp.).
Micromeles Decne. (*Pyrus* p.p.). Rosaceae (II). 10 N. temp.
Micromelum Blume. Rutaceae (v). 6 Indomal.
Micromeria Benth. Labiatae (vi). 130 cosmop. *M. Douglasii* Benth. (Calif., &c.) is the Yerba buena (medicinal).
Micromyrtus Benth. Myrtaceae (II. 2). 12 Austr.
Micronoma H. Wendl. Palmaceae (inc. sed.). Nomen.
Micronychia Oliv. Anacardiaceae (3). 1 Madagascar.
Microphacos Rydberg (*Astragalus* p.p.). Leguminosae (III. 6). 2 N. Am.
Micropholis Pierre = *Sideroxylon* Dill. (Sapot.).
Microphyes Phil. Caryophyllaceae (I. 3). 2 Chili.
Microphysa Naud. Melastomaceae (1). 2 Brazil, Peru.
Micropiper Miq. = *Peperomia* Ruiz et Pav. (Piper.).
Micropleura Lag. (*Centella* p.p. *EP*). Umbelliferae (I. 1). 1 Chili.
Microplumeria Baill. Apocynaceae (I. 3). 1 Amazon valley.
Micropogon Spreng. Inc. sed. Nomen.
Micropora Hook. f. (*Hexapora* p.p.). Lauraceae (II). 1 Penang.
Micropsis DC. Compositae (4). 1 Chili.
Micropus L. Compositae (4). 5 W. As., Medit., N. Am.
Microrhamnus A. Gray. Rhamnaceae. 1 Mexico, Texas.
Microrhynchus Less. (*Launaea* p.p. *EP*). Compositae (13). 20 Ind., Medit., S. Afr.
Microrhodium C. B. Clarke. Gentianaceae (1). 1 Malay Peninsula.
Microsaccus Blume. Orchidaceae (II. 20). 4 Malaya.
Microschoenus C. B. Clarke. Cyperaceae (II). 1 W. Himalaya.
Microschwenkia Benth. (*Melananthus* p.p.). Solanaceae (5). 1 C. Am.
Microsciadium Boiss. Umbelliferae (III. 5). 1 Asia Minor.
Microsechium Naud. Cucurbitaceae (4). 2 Mexico.
Microselinum Andr. Umbelliferae (inc. sed.). 1 Russia.
Microsemia Greene (*Streptanthus* p.p.). Cruciferae (1). 1 N. Am.
Microsemma Labill. Flacourtiaceae (inc. sed.). 1 New Caledonia.
Microseris D. Don. Compositae (13). 40 Am., Austr., N. Z.
Microspermae. The 11th order (*EP*) of Monocots. The 1st series (*BH*) of Monocots.
Microspermum Lag. Compositae (6). 2 Mexico.
Microsplenium Hook. f. Caprifol. (= *Machaonia*, Rubiac., ?). 1 Mexico.
Microstachys A. Juss. = *Sebastiania* Spreng. p.p. (Euph.).
Microsteira Baker. Malpighiaceae (1). 1 Madag.
Microstelma Baill. Asclepiadaceae (II. 4). 2 Mexico.
Microstemma R. Br. Asclepiadaceae (II. 3). 2 N. E. Austr.
Microstemon Engl. Anacardiaceae (3). 2 Malay Peninsula.
Microstephanus N. E. Br. (*Astephanus* *EP*). Asclepiad. (II. 1). 1 E. Afr.

- Microsteris** Greene (*Collomia* p.p. *EP.*). Polemoniaceae. 9 W. Am.
Microstylis Nutt. Orchidaceae (II. 4). 100 As., Am. Fl. twisted through 360° (*cf.* *Malaxis*).
Microtatorchis Schlechter (*Taeniophyllum* p.p.). Orchidaceae (II. 20). 4 New Guinea, Fiji, New Caled.
Microtea Sw. Phytolaccaceae. 10 trop. S. Am., W.I.
Microtis R. Br. Orchidaceae (II. 2). 5 Australia, New Zealand.
Microtoena Prain (*Plectranthus* p.p.). Labiatae (VI). 6 Chi., Ind., Java.
Microtrichia DC. Compositae (3). 1 trop. Afr.
Microtropis Wall. Celastraceae. 12 Indomal.
Microula Benth. Boraginaceae (IV. 2). 2 Himalaya.
Middelbergia Schinz ex Pax = *Cluytia* Boerh. p.p. (*Euph.*).
Miersia Lindl. Liliaceae (IV). 2 Chili.
Miersiella Urb. (*Dictyostegia* p.p.). Burmanniaceae. 1 S.E. Brazil.
Miersiophyton Engl. (*Chasmanthera* p.p.). Menispermaceae. 1 trop. Afr.
Mignonette, *Reseda odorata* L.; - **tree**, *Lawsonia inermis* L.
Mihi, as authority to sp., accepted by author as the correct form.
Mikania Willd. Compositae (2). 175 trop., all but one (*M. scandens* Willd.) confined to Am. Twining herbs or shrubs, with opp. l.
Mildbraedia Pax. Euphorbiaceae (A. II. 5). 1 C. Afr.
Mildbraediodendron Harms. Leguminosae (II. 9). 1 C. Afr.
Milfoil, *Achillea Millefolium* L.; **water -**, *Myriophyllum*.
Milicia Sim. Ulmaceae. 2 S.E. Afr.
Milium L. Gramineae (8). 6 N. temp. *M. effusum* L. (millet-grass) Brit. L.-blade turned over on itself (*cf.* *Alstroemeria*).
Miliusa Leschen. ex A. DC. Anonaceae (2). 25 Indomal.
Milk thistle, *Silybum Marianum* Gaertn.; - **tree**, *Brosimum Galactodendron* D. Don (Venezuela), *Mimusops elata* Allem. (Brazil); - **vetch** *Astragalus*; - **weed**, *Asclepias*; - **wort**, *Polygala vulgaris* L.; **sea -**, *Glaux maritima* L.
Milla Cav. Liliaceae (IV). 1 Mexico.
Millefolium Tourn. = *Achillea* L. p.p. (*Comp.*).
Milleria Houst. ex L. Compositae (5). 1 C. Am., Mexico.
Millet, *Panicum*, *Sorghum*, &c.; **bulrush -**, *Pennisetum typhoideum* Rich.; - **grass**, *Milium*; **great -**, *Sorghum vulgare* Pers.; **Indian -**, *Panicum miliaceum* L.; **Italian -**, *Setaria italica* Beauv.; **little -**, *Panicum miliare* Lamk.; **pearl -**, *Pennisetum typhoideum* Rich.; **Samoa -**, *Panicum*; **spiked -**, *cf.* *pearl*.
✓ **Millettia** Wight et Arn. Leguminosae (III. 6). 70 trop. and subtrop. |*.
Milligania Hook. f. Liliaceae (VI). 4 Tasmania.
Millingtonia L. f. Bignoniaceae (1). 1 Burma.
Millotia Cass. Compositae (4). 2 temp. Austr.
Millspaughia Robinson. Polygonaceae (III. 1). 2 C. Am.
Milnea Roxb. = *Aglaiia* Lour. (*Meli.*).
Miltianthus Bunge. Zygophyllaceae. 1 Afghanistan.
Miltonia Lindl. Orchidaceae (II. 19). 20 trop. Am. Epiphytes.
Miltonioda ×. Orchidaceae. Hybrid, *Miltonia*-*Cochlioda*.
Milula Prain. Liliaceae (inc. sed.). 1 E. Himalaya.
Mimela Phil. (*Leuceria* p.p. *EP.*). Compositae (12). 1 Chili.

Mimetanthe Greene (*Mimulus* p.p. *BH.*). Scrophular. (II. 6). 1 S.W. N. Am.

Mimetes Salisb. Proteaceae (I). 15 S. Afr.

Mimophytum Greenman. Boraginaceae (IV. 1). 1 Mexico.

Mimosa L. Leguminosae (I. 5). 400 trop. and subtrop. Am., a few in Afr. and As. *M. pudica* L. (sensitive plant) is now a common trop. weed and is cult. in hothouses. Mainly herbs and undershrubs, frequently with stipular thorns. *M. pudica* has a bipinnate l. with four secondary petioles. It is exceedingly sensitive, and a touch or shake will make it move rapidly into the position which it assumes at night. The leaflets move upwards in pairs, closing against one another, the secondary petioles close up against one another and the main petiole drops through about 60°. After a short time the movements are slowly reversed. They are effected by the aid of a *pulvinus* or swollen joint at each point of movement. Each pulvinus can be made to work independently of the rest by gentle stimulation, and the propagation of the stimulus from pulvinus to pulvinus may also be seen. The ribs of the fr. are frequently thorny and are usu. dropped on dehiscence.

Mimulopsis Schweinf. Acanthaceae (IV. A). 15 trop. Afr., Madag.

Mimulus L. Scrophulariaceae (II. 6). 80 cosmop. *M. luteus* L. (yellow monkey-flower) nat. in Brit. *M. moschatus* Dougl. is the common musk-plant of cottage windows. Insects entering the fl. touch first the stigma, which is sensitive to contact and closes up (*cf.* *Martynia*). Cult. orn. fl.

Mimusops L. Sapotaceae (2). 65 trop. *M. Balata* Crueg. (*M. globosa* Gaertn.; Guiana) yields a gutta-percha (balata). *M. elata* Allem. is the Brazilian milk tree or Masseranduba. The timber is hard and durable, the fr. edible, "but strangest of all is the vegetable milk, which exudes in abundance when the bark is cut; it has about the consistence of thick cream." (Wallace, *Amazon*, ch. II.) It is used as milk, and for glue.

Mina Cerv. (*Ipomoea* L. p.p. *BH.*, *Quamoclit* *EP.*). Convolvulaceae (1). 2 Mexico. Cult. orn. fl.

Minaea Lojaccono (*Bivonaea* p.p. *EP.*, *Thlaspi* p.p. *BH.*). Cruciferae (2). 2 Italy, Spain.

Minkellersia Mart. et Gal. Leguminosae (III. 10). 3 Mexico.

Minquartia Aubl. Olacaceae (Bignon. *BH.*). 1 Guiana.

Mint, *Mentha*, esp. *M. viridis* L.; **cat-**, *Nepeta cataria* L.; **pepper-**, *Mentha piperita* L., (Am.) *Mirabilis*.

Minuartia L. = *Arenaria* Rupp. p.p. (*BH.*) = *Alsine* p.p. (Caryo.).

Minuria DC. Compositae (3). 4 Austr.

Minuriella Tate. Compositae (3). 1 Austr.

Minurothamnus DC. Compositae (4). 1 Cape Colony.

Mionandra Griseb. Malpighiaceae (II). 1 Argentina.

Miquelia Meissn. Icacinaceae. 6 Indomal.

✓ **Mirabilis** Riv. ex L. (*BH.* excl. *Oxybaphus* L'Hérit.). Nyctaginaceae (1). 25 trop. Am. At the base of the fl. is an involucre of 5 l. resembling a K; it is really the bracts of a 3-fl. dich. cyme, of which in most only the central fl. is developed. In some, however, *e.g.* *M. coccinea* Benth. et Hook. f., the invol. encloses > 1 fl. The fl.

- opens in the evening and is protog. (in *M. Jalapa* L. and other sp.), with ultimate autogamy on withering. The invol. often forms a parachute on the fr. The tuberous roots of *M. Jalapa* L. (false jalap, four-o'clock, marvel of Peru) were formerly used as jalap.
- Mirasolia** Sch.-Bip. (*Tithonia* p.p. *EP.*, *Gymnolomia* p.p. *BH.*). Compositae (5). 2 Mexico, C. Am.
- Mirbelia** Sm. Leguminosae (III. 2). 16 Austr.
- Mirtana** Pierre (*Anamirta* p.p.). Menispermaceae. 1 Cochinchina.
- Misanteca** (*Miscanteca*) Cham. et Schlecht. Lauraceae (II). 4 trop. Am., W.I.
- Miscanthus** Anderss. Gramineae (2). 10 S. and E. As.
- Miscellaneous useful products** may be roughly grouped into such things as beads (*Abrus*), cork (*Quercus*), teasels (*Dipsacus*), vegetable ivory (*Phytelephas*), weights (*Abrus*, &c.). Cf. these heads.
- Mischobulbum** Schlechter (*Tainia* p.p.). Orchidaceae (II. 9). 5 N.G.
- Mischocarpus** Blume (*Ratonia* p.p. *BH.*). Sapindaceae (I). 12 Indomal.
- Mischocodon** Radlk. Sapindaceae (I). 1 New Guinea.
- Mischodon** Thw. Euphorbiaceae (A. I. 1). 1 Ceylon, S. India.
- Mischophloeus** Scheff. Palmaceae (IV. 1). 1 Ternate.
- Miscolobium** Vog. = *Dalbergia* L. (Legum.).
- Missiessya** Gaudich. = *Leucosyke* Zoll. (Urtic.).
- Mission grass**, *Stenotaphrum*.
- Mistletoe**, *Viscum*, esp. *V. album* L., *Loranthaceae*, (Am.) *Phoradendron*.
- Mistus, mixtus** (Lat.), cross-bred between forms of a sp.
- Mitchella** L. Rubiaceae (II. 7). 2 N. Am. (*M. repens* L.) and Japan. Dimorphic heterostyled. The fls. are in pairs with united ovaries. Occasionally K and C also fuse and give a double ovary surmounted by a 10-lobed K and C (cf. *Lonicera*).
- Mitella** Tourn. ex L. Saxifragaceae (I). 10 N. Am., Japan. The inconspic. greenish fls. stand in unilateral racemes.
- Mitellastra** Howell (*Mitella* p.p.). Saxifragaceae (I). N.W. N. Am.
- Mitolepis** Balf. f. Asclepiadaceae (I). 1 Socotra.
- Mitophyllum** Greene (*Streptanthus* p.p.). Cruciferae (I). 1 Calif.
- Mitostemma** Mast. Passifloraceae. 2 Brazil, Guiana.
- Mitostigma** Decne. in DC. Asclepiadaceae (II. 1). 6 S. Am.
- Mitozus** Miers (*Echites* R. Br. p.p.). Apocynaceae (II. 1). 20 S. Am.
- Mitracarpum** Zucc. Rubiaceae (II. 10). 15 S. Am., Afr.
- Mitragnya** Korth. Rubiaceae (I. 6). 12 trop. As., Afr.
- Mitrantes** Berg (*Calyptranthes* *BH.*). Myrtaceae (I). 4 trop. Am., W.I.
- Mitraria** Cav. Gesneriaceae (I). 1 Chili.
- Mitrasacme** Labill. Loganiaceae. 28 Austr., N.Z., trop. As.
- Mitrastemma** (*Mitrastemon*) Makino. Rafflesiaceae. 1 Japan.
- Mitratheca** K. Schum. Rubiaceae (I. 2). 1 trop. Afr.
- Mitre-flower**, *Mitraria*; -wort (Am.), *Mitreola*.
- Mitreola** L. Loganiaceae. 4 Am., Indomal., Austr.
- Mitrephora** Hook. f. et Thoms. Anonaceae (2). 25 trop. As.
- Mitriostigma** Hochst. (*Randia* p.p. *EP.*). Rubiaceae (I. 8). 3 trop. and S. Afr.
- Mixed** (infl.), partly racemose, partly cymose, *Aesculus*, *Betulaceae*, *Ceratostigma*, *Labiatae*, *Morina*, *Statice*, *Verbascum*.

- Miyoshia** Makino (*Protolirion* Ridl.). Liliaceae (1). 1 Japan.
Mnassea Vell. Inc. sed. 1 Brazil.
Mnemion Spach = *Viola* Tourn. (Viol.).
Mniochloa Chase (*Digitaria* p.p.). Gramineae (5). 2 Cuba.
Mniodes A. Gray. Compositae (4). 2 Peru.
Mniopsis Mart. Podostemaceae. 4 Brazil.
Mniothamnus Niedenzu (*Berzelia* p.p.). Bruniaceae. 1 S. Afr.
Moa, *Bassia latifolia* Roxb.
Moccasin flower (Am.), *Cypripedium*.
Mocinna Cerv. ex La Llave = *Carica* L. (Caric.).
Mocker nut (Am.), *Carya tomentosa* Nutt.
Mock-orange (Am.), *Philadelphus*.
Mocquerysia Hua. Flacourtiaceae (10). 1 trop. W. Afr.
Modecca Lam. (*Adenia* Forsk. EP.). Passifloraceae. 50 palaeotrop.
Modiola Moench. Malvaceae (2). 1 Am., S. Afr. (?).
Modiolastrum K. Schum. (*Modiola* Moench). Malvac. (2). 1 S. Am.
Moehringia L. (*Arenaria* p.p. BH.). Caryophyllaceae (1. 1). 20 N. temp.
Moenchia Ehrh. (*Cerastium* p.p. BH.). Caryophyllaceae (1. 1). 5 Eur., Medit.
Moerenhoutia Blume. Orchidaceae (II. 2). 2 Polynesia.
Moghania Jaume St Hil. (*Flemingia* Roxb.). Legum. (III. 10). 20 palaeotrop.
Mogiphanes Mart. (*Alternanthera* p.p. EP.). Amarantaceae (3). 12 trop. Am.
Mogorium Juss. = *Jasminum* Tourn. (Oleac.).
Mohadenium Pax. Euphorbiaceae (A. II. 8). 1 E. Afr.
Mohavea A. Gray. Scrophulariaceae (II. 3). 2 S.W. U.S.
Mohlana Mart. Phytolaccaceae. 2 S. Am., trop. Afr., Madag.
Mohria Sw. Schizaeaceae. 3 trop. and S. Afr. Sporangia on under side of ordinary l., margins turned back over them (cf. *Pteris*).
Moldenhauera Schrad. Leguminosae (II. 7). 3 Brazil, Venezuela.
Molina Ruiz et Pav. = *Baccharis* L. (Comp.).
Molinaea Comm. ex Juss. (*Cupania* p.p. BH.). Sapindaceae (1). 8 Madagascar, Mascarene Is.
Molineria Parl. (*Aira* p.p. BH.). Gramineae (9). 3 W. and S. Eur., As. Min.
Molineriella Rouy (*Aira* p.p.). Gramineae (9). 1 Medit.
Molinia Schrank. Gramineae (10). 1 Eur. (incl. Brit.), As., *M. caerulea* Moench, char. of wet grass moors.
Mollera O. Hoffm. Compositae (4). 2 trop. Afr.
Mollia Mart. Tiliaceae. 7 trop. S. Am.
Mollinedia Ruiz et Pav. Monimiaceae. 70 trop. Am.
Mollis (Lat.), soft, pubescent.
Mollugo L. Aizoaceae (1). 15 trop., and N. Am.
Molopanthera Turcz. Rubiaceae (I. 5). 1 E. Brazil.
Molospermum Koch. Umbelliferae (III. 2). 1 W. Medit.
Moltkia Lehm. Boraginaceae (IV. 4). 6 Himalaya to Medit.
Moluccella L. Labiatae (VI). 2 Medit.
Moly, *Allium Moly* L.
Mombin, *Spondias*.

- Momis** F. G. Dietr. = *Celtis* Tourn. p.p. (Ulm.).
- Momordica** (Tourn.) L. Cucurbitaceae (3). 25 palaeotrop.
- Monachanthus** Lindl. = *Catasetum* Rich. (Orchid.).
- Monachochlamys** Baker. Acanthaceae (11). 1 Madag.
- Monachosorum** Kunze. Polypodiaceae. 2 E. warm As.
- Monachyron** Parl. (*Tricholaena* p.p.). Gramineae (5). 1 Cape Verde Is.
- Monastinocephalus** Klatt (*Inula* p.p. *EP.*). Compositae (4). 1 S. Afr.
- Monactis** H. B. et K. Compositae (5). 2 trop. S. Am.
- Monadelphanthus** Karet (*Capirona* p.p. *EP.*). Rubi. (1. 4). 1 Colombia.
- Monadelphous** (A), conrescent in one bundle.
- Monadenia** Lindl. (*Disa* p.p. *BH.*). Orchidaceae (11. 1). 12 Cape Col.
- Monadenium** Pax. Euphorbiaceae (A. 11. 8). 5 trop. Afr.
- Monandrous**, with one sta.
- Monanthes** Haw. Crassulaceae. 3 Morocco, Canaries. Cult. orn. pl.
- Monanthochloe** Engelm. Gramineae (10). 1 S. U.S. and Argentina.
- Monanthotaxis** Baill. Anonaceae (1). 1 Congo.
- Monarda** L. Labiatae (vi). 20 N. Am. Sta. 2. Fl. protandrous, visited by bees (and humming-birds in the red sp.). The l. of some are used medicinally in the form of tea (Oswego-tea).
- Monardella** Benth. Labiatae (vi). 25 W. N. Am.
- Monarrhenus** Cass. Compositae (4). 3 Madagascar, Mascarene Is.
- Monarthrocarpus** Merrill (*Desmodium* p.p.). Leguminosae (111. 7). 1 Phil. Is.
- Monechma** Hochst. (*Justicia* p.p.). Acanthaceae (1v. B). 50 trop. Afr.
- Monelasum** Van Tiegh. = *Ouratea* Aubl. (Ochn.).
- Monelytrum** Hack. Gramineae (3). 1 S.W. Afr.
- Monenteles** Labill. = *Pterocaulon* Ell. (Comp.).
- Monerma** Beauv. (*Psilurus* p.p. *BH.*). Gramineae (12). 3 warm |*.
- Moneses** Salisb. (*Pyrola* p.p.). Pyrolaceae. 1 boreal and arctic.
- Money wort**, *Lysimachia Nummularia* L.; **Cornish - -**, *Sibthorpia europaea* L.
- Moniliform**, like a row of beads.
- Monimia** Thou. Monimiaceae. 3 Madag., Mascarenes.
- Monimiaceae** (*EP.*, *BH.*). Dicots. (Archichl. Ranales; Micrembryae *BH.*). 30 gen., 200 sp., chiefly S. trop., and esp. in the 'oceanic' floral regions (Madag., Austr., Polynes.). Shrubs and trees, with leathery evergr. l., often resiniferous with aromatic scent, usu. opp., exstip. Fls. sol. or in cymes., perigynous, commonly unisexual, reg.; often the two sexes differ in the hollowing of the axis. Frequently the bud opens by throwing off the outer ends of the P-leaves as a sort of lid. P 4— ∞ , simple, or 0; A ∞ or few, the anthers intr. or extr., opening by slits or valves; G. usu. ∞ , sometimes few or 1, each with 1 usu. basal erect anat. ovule. Fr. of achenes, often $\pm$ enclosed in or borne on a fleshy recept. Embryo straight, in copious endosp. The fam. forms a connecting link between Lauraceae and the other Ranales, being closely allied on one side to L., on the other to Calycanthaceae. *Chief genera*: *Hedycaria*, *Peumus*, *Tambourissa*, *Laurelia*.
- Monixus** Finet (*Angraecum* p.p.). Orchid. (11. 20). 8 trop. Afr., Madag.
- Monizia** Lowe = *Thapsia* L. (*BH.*) = *Melanoselinum* Hoffm.

Monkey apple (W.I.), *Anona palustris* L.; **-bread**, *Adansonia digitata* L.; **-flower**, *Mimulus luteus* L.; **-pot**, *Lecythis*; **-puzzle**, *Araucaria imbricata* Cav.

Monkshood, *Aconitum*.

Monnieria L. Butaceae (1). 2 trop. S. Am.

Monnina Ruiz et Pav. Polygalaceae. 75 Mexico to Chili. One of the two cpls. is usu. rudimentary. Fr. indehiscent.

Mono- (Gr. pref.), one; **-carpellary**, of 1 cpl.; **-carpic**, once-fruiting, *Agave*, *Corypha*, &c.; **-chasial cyme**, one in which each successive branch bears one branch upon itself, and of four types, *bostryx*, *cincinnus*, *drepanium*, *rhypidium*, q.v.; **-chlamydeous**, with one whorl of P; **-clinous**, hermaphrodite; **-ecious**, with ♂ and ♀ fls. on the same pl.; **-graph**, a systematic account of a group; **-petalous**, sympetalous; **-podial branching**, **-podium**, where the same growing point continues in a straight line from year to year, and forms branches in regular succession, *Coniferae*, *Paris*, *Pothos*; **-spermous**, one-seeded; **-symmetrical**, zygomorphic; **-thecal**, *Malvaceae*; **-tocous**, fruiting once only; **-typic** (genus), with one species.

Monocarpia Miq. Anonaceae (1). 2 trop. As.

Monocera Jack = *Elaeocarpus* Burm. p.p. (*Elaeocarp.*).

Monochaete Doell. Gramineae (11). 1 Brazil.

Monochaetum Naud. Melastomaceae (1). 30 W. trop. Am. A dimorphous. The style, at first bent down., moves slowly up till horiz.

Monochasma Maxim ex Franch. et Sav. Scroph. (III. 3). 1 Japan, China.

Monochilus Fisch. et Mey. Verbenaceae (1). 1 Brazil.

Monochilus Wall. ex Lindl. = *Zeuxine* Lindl. (Orchid.).

Monochlamydeae (B.H.). One of the chief divisions of Dicots.

Monochoria C. Presl. Pontederiaceae. 4 E. Afr. to Austr.

Monococcus F. Muell. Phytolaccaceae. 1 Austr., New Caled.

Monocosmia Fenzl. Portulacaceae. 1 Chili.

Monocostus K. Schum. Zingiberaceae (11). 1 Peru.

Monocotyledones. One of the two great divisions of Angiospermae. Their classification is less difficult than that of the Dicotyledons, and a comparison should be made of the ways in which it is done in the various systems.

On the origin of M., one of the great unsolved problems in phylogeny, cf. Seward, *Geological History*, in *Ann. of Bot.* x, 1896, p. 205; Miss Sargent, *Theory of origin of M.*, in *do.* xvii, 1903, p. 1, and esp. review by Bancroft, in *New Phytol.* 13, 1914, p. 285.

Monodora Dun. Anonaceae (5). 10 trop. Afr., Madag. Berry with woody epicarp. Seeds of *M. Myristica* Dun. sometimes used as nutmegs.

Monogramma Schk. Polypodiaceae. 15 trop. and subtrop.

Monolena Triana. Melastomaceae (1). 4 trop. S. and C. Am. Cult. orn. fl.

Monolepis Schrad. Chenopodiaceae (A). 3 N. Am.

Monolopia DC. Compositae (6). 5 Calif.

Monomeria Lindl. Orchidaceae (II. 16). 2 Nepal, Burma.

Monoon Miq. = *Polyalthia* Blume p.p. (Anon.). .

- Monopetalanthus** Harms. Leguminosae (II. 2). 2 trop. Afr.
Monophrynium K. Schum. (*Phrynium* p.p.). Marantaceae. 2 Phil. Is.
Monophyllaea R. Br. Gesneriaceae (I). 7 Malay Archipelago.
Monophyllanthe K. Schum. Marantaceae. 1 French Guiana.
Monoporandra Thw. Dipterocarpaceae. 2 Ceylon.
Monoporus A. DC. (*Ardisia* p.p.). Myrsinaceae (II). 6 Madagascar.
Monopsis Salisb. (*Lobelia* p.p. *BH.*). Campanul. (III). 9 S. Afr., Abyss.
Monopteryx Spruce. Leguminosae (III. 1). 2 Amazon valley.
Monoptilon Torr. et Gray. Compositae (3). 1 California, Utah.
Monopyle Moritz ex B. et H. f. Gesneriaceae (II). 6 C. Am. to Peru.
Monopyrena Spegazzini. Verbenaceae (I). 1 Patagonia.
Monosepalum Schlechter (*Bulbophyllum* p.p.). Orchidaceae (II. 16). 3 New Guinea.
Monosis DC. = *Vernonia* Schreb. p.p. (Comp.).
Monostachya Merrill. Gramineae (10). 1 Luzon.
Monostemma Turcz. (*Sarcostemma* p.p.). Asclepiad. (II. 1). 1 S. Afr.
Monotagma K. Schum. (*Ischnosiphon* p.p.). Marant. 8 trop. and S. Am.
Monotaxis Brongn. Euphorbiaceae (B. II). 7 Austr.
Monotes A. DC. Dipterocarpaceae. 6 trop. Afr.
Monothecium Hochst. Acanthaceae (IV. B). 3 palaeotrop.
Monotoca R. Br. Epacridaceae (3). 6 Austr.
Monotropa L. (incl. *Hypopitys* Dill.). Pyrolaceae. 3 N. temp. *M. Hypopitys* Walt. (yellow bird's-nest), in fir, birch and beech woods in Brit., a yellowish saprophyte with scaly l. and a short term. raceme of fls. Below the soil is found a very much branched root system, the roots being covered with a superficial mycorrhiza by whose aid absorption takes place. Buds are formed adv. upon the roots and lengthen into the flowering shoots.
Monotropeae (*BH.*; *Pyrolaceae* p.p. *EP.*). Dicots. (Gamopet. Ericales). A fam. containing the saprophytic Pyrolaceae only.
Monotropsis Schwein. ex Ell. = *Schweinitzia* Ell. (Pyrol.).
Monoxalis Small (*Oxalis* p.p.). Oxalidaceae. 1 N. Am.
Monsonia L. Geraniaceae. 12 Afr., As.
Monstera Adans. Araceae (II). 27 trop. Am. Climbing shrubs with pinnatifid l., full of round holes. When very young the l. is entire; then the tissue between the veins ceases to grow rapidly, becomes dry and tears away, thus leaving holes between the ribs; at the edge the marginal part usually breaks, and thus the outermost hole gives rise to a notch in the l., which becomes pinnated. Beginning as a climber the pl. usu. ends as an epiph. with aerial roots to the soil. Fls. ♂ & ♀. The fr. of *M. deliciosa* Liebm. is ed.
Monstrosities, marked aberrant variations suddenly appearing.
Montagnaea DC. = *Montanoa* Cerv. (*BH.*) = *Eriocoma* H. B. et K. (Comp.).
Montanoa Cerv. Compositae (5). 25 Mexico to Colombia. Cult. orn. fl.
Montanus (Lat.), mountain.
Montbretia DC. = *Tritonia* Ker-Gawl p.p. (Irid.).
Monterey cypress, *Cupressus macrocarpa* Hartn.
Montezuma (Moç. et Sesse ex) DC. Bombacaceae. 1 Mexico.

Montia Mich. ex L. Portulacaceae. 1 cosmop. *M. fontana* L. (blinks), an annual herb, usu. in wet places, with small cymes of fls. In bad weather or when submerged they become cleistogamic. The stalk moves like that of *Claytonia*, and the fr. explodes in the same way. Eaten as salad. [Am. authors incl. *Claytonia* p.p.]

Montinia Thunb. Saxifragaceae (v). 1 S. Afr.

Montiopsis O. Ktze. Portulacaceae. 1 Bolivia.

Montolivaia Reichb. f. (*Habenaria* p.p.). Orchid. (II. 1). 1 Abyssinia.

Montrichardia Crueg. Araceae (IV). 2 trop. S. Am., W.I.

Montrouzieria Planch. ex Planch. et Triana. Guttif. (v). 3 New Caled.

Monttea C. Gay. Scrophulariaceae (II. 6). 3 Chili.

Moonia Arn. (*Chrysogonum* p.p. BH.). Compositae (5). 5 Indomal.

Moonseed, *Menispermum*; -wort, *Botrychium*.

Moorea Lemaire (*Cortaderia* p.p.). Gramineae (10). 5 S. Am.

Moorea (*Neomoorea*) Rolfe. Orchidaceae (II. 13). 1 S. Am.

Moquilea Aubl. Rosaceae (VI). 20 S. and C. Am. Some apet.

Moquinia DC. Compositae (12). 10 S. Am. Dioecious shrubs.

Mora Schomb. ex Benth. = *Dimorphandra* Schott (Legum.).

Moraceae (EP.; *Urticaceae* p.p. BH.). Dicots. (Archichl. Urticales). 55 gen., 800 sp., trop. and subtrop., a few temp. Most are trees or shrubs with stip. l., and with latex. [See *Ficus*, *Cecropia*, *Maclura*, *Humulus*.] Infl. cymose, usu. in the form of (pseudo-) racemes, spikes, umbels or heads (cf. *Urticaceae*, and paper there cited). Fls. unisexual. P usu. 4 or (4), persistent; A in ♂ = 1. and opp. to P, bent inwards or straight in the bud, not exploding like those of *Urticaceae*; G in ♀ of (2) cpls. of which one is usu. aborted all but the style; ovary 1-loc. sup. to inf.; ovule 1, pend., with micropyle facing upwards, or rarely basal and erect. Fr. an achene or drupe-like; but commonly a multiple fr. arises by union of the frs. of different fls., often complicated by addition of the fleshy common recept. (see *Morus*, *Ficus*, *Artocarpus*). Seed with or without endosp.; embryo usu. curved. Many yield useful fruits, e.g. *Morus*, *Artocarpus*, *Ficus*, *Brosimum*, &c.; other important economic plants are *Broussonetia* (paper), *Castilloa* (rubber), *Brosimum* (milk), *Ficus* (caoutchouc, lac, timber, &c.), *Cannabis* (hemp, ganja), *Humulus* (hop) and others.

Classification and chief genera (after Engler):

- I. *MOROIDEAE* (sta. incurved in bud; ovule apical, anato- or amphitr.; l. folded in bud; stipules small and not leaving an amplexicaul scar on falling): *Morus*, *Maclura*, *Broussonetia*, *Dorstenia*.
- II. *ARTOCARPOIDEAE* (sta. straight; ovule as in I.; l. convolute; stipules leaving an amplexicaul scar): *Artocarpus*, *Castilloa*, *Antiaris*, *Brosimum*, *Ficus*.
- III. *CONOCEPHALOIDEAE* (sta. straight; ovule at base or apex, orthotr. or slightly curved; l. &c., as in II.): *Cecropia*.
- IV. *CANNABOIDEAE* (sta. short and straight; ovule apical, anatrat.; achene; endosp.; herbs with free stipules): *Humulus*, *Cannabis*.

Moraea Mill. ex L. Iridaceae (II). 60 Afr., Austr. The outer integument of the ovule becomes fleshy as it ripens. Cult. orn. fl.

- Morass weed** (W.I.), *Ceratophyllum*.
Morelia A. Rich. Rubiaceae (1. 8). 1 trop. Afr.
Morella Lour. (*Myrica* p.p.). Myricaceae. 4 U.S.
Morenia Ruiz et Pav. (*Chamaedorea* p.p. *BH.*). Palm. (iv. 1). 5 Andes.
Moreton Bay chestnut, *Castanospermum australe* A. Cunn.
Moretia DC. Cruciferae (4). 4 Arabia to Morocco.
Morgania R. Br. Scrophulariaceae (11. 6), 4 Austr.
Moricandia DC. Cruciferae (4). 10 Medit.
Moriche, *Mauritia*.
Moriera Boiss. (*Aethionema* p.p. *EP.*). Cruciferae (2). 7 W. As.
Morierina Vieill. Rubiaceae (1. 1). 2 New Caled.
Morina Tourn. ex L. Dipsacaceae. 10 E. Eur., As. Infl. like Labiatae.
Morinda L. Rubiaceae (11. 9). 45 sp. trop. Fls. in heads; the ovaries united. Several yield dye-stuffs.
Morindopsis Hook. f. Rubiaceae (1. 8). 1 Burma.
Moringa Burm. The only genus of Moringaceae. 3 Medit., India. Trees with deciduous l.; fls. in racemes, 4-, 5-merous. P and A on cupule-like disc; G on gynophore, 1-loc. with 3 parietal plac. Capsule pod-like. Seeds winged, exalbum. *M. oleifera* Lam. cult. for the oil (ben-oil) obtained from the seeds.
Moringaceae (*EP.*, *BH.*). Dicotyledons (Archichl. Rhoadales). Only genus *Moringa* (*q.v.*). It forms a connecting link to the Rosales (Leguminosae). *BH.* place it as an anomalous order at the end of Disciflorae.
Moringeae (*BH.*) = Moringaceae.
Morisia J. Gay. Cruciferae (2). 1 Sardinia, Corsica.
Morisonia L. Capparidaceae (11). 4 W.I., S. Am.
Moritzia DC. ex Meissn. Boraginaceae (iv. 4). 4 trop. S. Am.
Morkillia Rose et Painter (*Chitonia* p.p.). Zygophyllaceae. 2 Mex.
Mormodes Lindl. Orchidaceae (11. 11). 20 trop. Am. Fl. complex; the column is bent to one side, the labellum to the other. The pollinia, with their viscid disc, are violently shot out if an insect touches the articulation of anther to column. See Darwin's *Orchids* p. 208. Cf. *Catasetum* and *Cynoches*, allied genera. Cult. orn. fl.
Mormolyce Fenzl. Orchidaceae (11. 18). 1 Mexico. Cult. orn. fl.
Morning glory, *Ipomoea purpurea* Roth.
Morocarpus Sieb. et Zucc. = *Debregeasia* Gaudich. (Urtic.).
Morongia Britton (*Schrankia* p.p.). Leguminosae (1. 3). 6 Am.
Moronobea Aubl. Guttiferae (v). 4 Guiana, N. Brazil.
Morphaea Nor. Inc. sed. Nomen.
Morphin, an alkaloid from opium.
Morphixia Ker-Gawl. = *Ixia* L. p.p. (Irid.).
Morphology, the comparative study of form and structure; cf. *Cactaceae*, *Euphorbia*.
-morphous (suff.), -shaped.
Morrenia Lindl. Asclepiadaceae (11. 1). 2 Argentina.
Mortonia A. Gray. Celastraceae. 4 N. Am.
Morus (Tourn.) L. Moraceae (1). 12 N. temp. Fls. monoec. or dioec., the ♂ in catkins, the ♀ in pseudo-spikes, wind-pollinated. Each ovary gives an achene enclosed in the P whose l. become completely

- united and fleshy. The whole mass of frs. thus produced on the one spike is closely packed together, giving a multiple fr. like a blackberry (*Rubus*), but of very different morphological nature. The fr. (mulberry) is edible. The leaves of *M. alba* L. (white mulberry), *M. nigra* L. (black mulberry), and others are used for feeding silkworms.
- Morysia** Cass. = *Athanasia* L. (Comp.).
- Moscharia** Ruiz et Pav. Compositae (12). 1 Chili.
- Moschatel**, *Adoxa Moschatellina* L.
- Moschopsis** Phil. Calyceraceae. 2 Chili, Patagonia.
- Moschosma** Reichb. Labiatae (VII). 6 palaeotrop.
- Moschoxylum** A. Juss. = *Trichilia* P. Br. p.p. (Meli.).
- Mosenodendron** R. Fries. (*Hornschiuchia* p.p. EP.). Anonac. (1). 1 Brazil.
- Mosla** Buch.-Ham. (*Hedeoma* p.p. BH.). Labiatae (VI). 8 Himal. to Japan.
- Mosquitoxylum** Krug. et Urb. Anacardiaceae (3). 1 Jamaica. Mosquito wood.
- Moss campion**, *Silene acaulis* L.; **club-**, **staghorn-**, *Lycopodium*; **long-**, **Spanish-**, *Tillandsia*; **-pink** (Am.), *Polemonium subulata* L.
- Mostuea** Didr. Loganiaceae. 10 trop. Afr., Madag., S. Am.
- Motandra** A. DC. Apocynaceae (II. 1). 5 W. Afr.
- Moth flowers** (class F), *Angraecum*, *Calystegia*, *Lilium*, *Lonicera*, *Oenothera*, *Paradisea*, *Silene*, *Yucca*.
- Motherwellia** F. Muell. (*Aralia* p.p. EP.). Araliaceae (2). 1 N.E. Austr.
- Motherwort**, *Leonurus Cardiaca* L.
- Moullava** Adans. Gentianaceae (inc. sed.). Nomen.
- Moulmein cedar**, *Cedrela Toona* Roxb.
- Moultonia** Balf. f. et W. W. Smith. Gesneriaceae (I). 1 Borneo.
- Moultonianthus** Merrill. Euphorbiaceae (A. II. 5). 1 Sarawak.
- Mountain ash**, *Pyrus Aucuparia* Ehrh.; **-damson** (W.I.), *Simaruba*; **-everlasting**, *Antennaria dioica* Gaertn.; **-grape** (W.I.), *Guettarda*, *Coccoloba*; **-paw**, *Carica candamarcensis* Hook.; **-plum** (W.I.), *Ximenia*; **-sorrel** (Am.), *Oxyria*.
- Mountnorrisia** Szysz. (*Anneslea* Wall.). Theaceae. 2 Indomal.
- Mourera** Aubl. Podostemaceae. 3 Guiana, Brazil.
- Mouriria** Juss. Melastomaceae (III). 40 trop. Am., W.I.
- Mouse-ear** (Am.), *Myosotis*; **--chickweed**, *Cerastium*; **-tail**, *Myosurus minimus* L.
- Moutabea** Aubl. Polygalaceae. 5 trop. S. Am.
- Movement**, **carpotropic** (of fl. stalk after fert.) and **gamotropic** (before fert.), *Aristolochia*, *Cardamine*, *Coronilla*, *Delphinium*, *Oxalis*, *Primula*, *Veronica*; **flower-**, *Anagallis*, *Bellis*, *Calandrinia*, *Papaver*, *Tragopogon*; **leaf-**, *Biophytum*, *Desmodium*, *Mimosa*, *Neptunia*; **shoot-**, cf. Nutation; **sleep-**, *Leguminosae*, *Oxalis*, &c.; **stamen-**, *Berberis*, *Portulaca*, *Sparmannia*, and cf. Dichogamy, which is usu. accompanied by movement of sta.
- Moya** Griseb. (*Gymnosporia* p.p. EP.). Celastraceae. 3 Argentina.
- Msuata** O. Hoffm. Compositae (1). 1 Congo.
- Mucilage**, a gummy secretion, frequent in water pl. and on seeds of *Anthemis*, *Barleria*, *Blepharis*, *Brassica*, *Collomia*, *Crossandra*, *Linum*, *Plantago*, *Ruellia*, &c. Cf. *Ophiopogon*.

Mucro, a sharp term. point ; *cf.* Leaf, fig. G, *b*.

Mucuna Adans. Leguminosae (III. 10). 35 trop. and subtrop. Some have stinging hairs on the pods. *M. pruriens* DC. is the cowage or cowitch, a var. of which is the Florida velvet bean, a useful fodder.

Mudwort, *Limosella aquatica* L.

Mudar fibre, *Calotropis gigantea* Ait.

Muehlbergella Feer (*Wahlenbergia* Schrad.). Campanul. (I. 1). 1 Cauc.

Muehlenbeckia Meissn. Polygonaceae (III. 1). 15 Austr. to S. Am. *M. platyclados* Meissn. has flat green phylloclades with transv. bands at the nodes, and green l. which drop early. Fls. polyg. or dioec.

Muehlenbergia Schreb. Gramineae (8). 65 N. Am., Andes, Japan, Himal. Some are useful fodder-grasses.

Muellera L. f. (*Coublandia* Aubl.). Leguminosae (III. 8). 2 trop. Am.

Muellerargia Cogn. Cucurbitaceae (2). 1 Timor.

Mug-wort, *Galium*, (Am.) *Artemisia*.

Muilla S. Wats. Liliaceae (IV). 3 California.

Mukia Arn. = *Melothria* L. p.p. (Cucurb.).

Mulberry, *Morus* ; -fig, *Ficus Sycomorus* L. ; **Indian -**, *Morinda citrifolia* L.

Mulgedium Cass. (*Lactuca* BH.). Compositae (13). 22 N. temp.

Mulinum Pers. Umbelliferae (I. 2). 20 char. pl. of southern Andes.

Mullein, *Verbascum*.

Multi- (Lat. pref.), many ; -**farious**, many ranked ; -**jugate**, with many pairs ; -**parous**, pleiochasial ; -**partite**, much cut ; -**ple fr.**, the product of several fls., combined into one fr., *Artocarpus*, *Broussonetia*, *Ficus*, *Maclura*, *Moraceae*, *Morus*, *Platanus*.

Multiovulatae Aquaticae and **M. Terrestres** (BH.). The 2nd and 3rd series of Incompletae.

Mumeazalea Makino (*Azaleastrum* p.p.). Ericaceae (I. 2). 1 Japan.

Munbya Pomel (*Psoralea* p.p. EP.). Leguminosae (III. 6). 2 Algeria.

Mundtia (*Mundia*) H. B. et K. Polygalaceae. 1 S. Afr.

Mundulea Benth. Leguminosae (III. 6). 12 trop. Afr., Madag., Ceylon, S. Ind.

Mung (India), green gram, *Phaseolus Mungo* L.

Munroa Torr. Gramineae (10). 3 S. U.S., Argentina.

Munronia Wight. Meliaceae (III). 7 Ceylon to China.

Muntingia Plum. ex L. Elaeocarpaceae. 3 trop. S. Am., W.I.

Muralis (Lat.), growing on walls.

Muraltia Neck. Polygalaceae. 45 S. Afr.

Muretia Boiss. Umbelliferae (III. 5). 3 W. As.

Muricaria Desv. Cruciferae (2). 1 N. Afr.

Muricate (dim. **muriculate**), rough with short firm outgrowths.

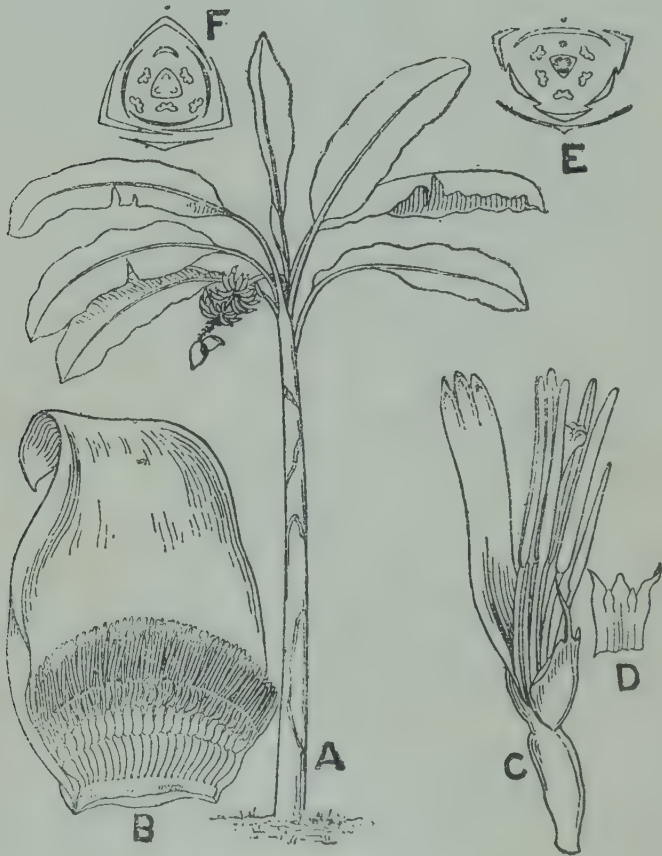
Muricauda Small (*Arum* p.p.). Araceae (VII). 1 Atl. N. Am.

Murraya Koen. ex L. Rutaceae (V). 4 Indomal. The timber is useful, and the l. are used in curries.

Murtonia Craib. Leguminosae (between III. 7 and III. 10). 1 Burma.

Musa L. Musaceae. 30 palaeotrop. Large herbs (to 10 ft.) with rhiz. and 'false' aerial stems (see fam.). The infl. springs from rhiz. and emerges at the top of the aerial 'stem.' Fls. ∞ , in the axils of leathery, often reddish-coloured bracts, the fruit-forming $\varnothing$ fls. at the

base of the infl. The sepals and two ant. petals are joined into a tube, the post. petal is free; there are 5 fertile sta., except in *M. Ensete* J. F. Gmel. where the post. sta. is also fertile; the ovary is 3-loc., with ∞ anatropous ovules. Fr. a longish berry. Seeds with mealy perisperm. *M. paradisiaca* L., the plantain, with its subsp. *M. sapientum* L., the banana, is one of the most important food-plants, and is everywhere cult. in the trop. and subtrop., yielding much more food per acre than even the potato. The cult. forms are



- A. Banana (*Musa paradisiaca*, subsp. *sapientum*) in fruit; the fruits are seen on the lower portion of the peduncle, the upper which bore male flowers is bare, at the extreme end a few spathes remain; much reduced. B. Single spathe with a large number of flowers crowded in its axil, reduced.
 C. Male flower of *M. Ensete*. The posterior median petal is on the right, the remaining five perianth-leaves are represented by the larger strap-shaped trifid limb on the left; the lateral members of the inner whorl are not represented in the incision of the limb.
 D. Upper portion of perianth-limb of *M. Cavendishii* shewing five lobes, the two smaller representing the lateral members of the inner whorl.
 E. Floral diagram of a bisexual flower of *Musa*.
 F. Floral diagram of *Heliconia metallica*.

A, after Redouté. B, C, from *Botanical Magazine*. D, after K. Schumann. E, F, after Eichler.

propagated entirely from the rhiz. and produce no seeds (*cf. Citrus*). About 200 different forms are in cult., and some other sp. are occasionally employed. There is a vast trade, esp. to the U.S., from C. Am., Jamaica, Canaries, &c. In Venezuela, &c. alcohol is prepared. The dried fr. are ground to form plantain-meal. The stalk of the infl. of *M. Ensete* (Abyss.) is cooked and eaten. The leaf-stalks of *M. textilis* Née (Philippines, &c.) furnish a useful fibre, known as Manila hemp or abaca. [For details of economic uses, &c., see *Kew Bulletin*, Aug. 1894.]

Musaceae (*E.P.*; *Scitamineae* p.p. *BH.*). Monocots. (Scitamineae). 6 gen., 70 sp. trop. They are (except *Ravenala*) gigantic herbs with usu. freely branching rhiz. from which the l. spring; the sheaths of the l. are rolled round one another below, and form what looks like an aerial stem, attaining in the banana some yards in height. The l. is large and oval, with a stout midrib, and parallel veins running from it to the edge; it is rolled up in bud. The edge is easily torn between the bundles, as they do not join in the same way as in a Dicot.; and so the wind and rain soon reduce the l. to a very ragged condition. Fls. in cymes or racemes with large brightly coloured bracts or spathes; usu. ♂, exc. *Musa*, and ♀, but nearer to the usual type of Monocotyledonous fl. than those of other Scitamineae. P 3+3, free or united in various ways, both whorls petaloid; A 3+2, the post. sta. repres. by a std.; $\bar{G}$ (3), 3-loc., with 1— ∞ ov. in each loc. Berry, caps., or schizocarp. Seed with straight embryo and mealy perisperm. Fls. rich in honey, and visited by bees and birds. *Musa* is an important economic genus.

Classification and genera: closely related to the other Scitamineae (joined by *BH.*), less closely to Liliiflorae and Orchids.

- I. *MUSOIDEAE* (l. alt., fl. collateral, post. P leaf free):
Musa.
- II. *STRELITZIOIDEAE* (l. in 2 ranks, fl. in cymes, K free):
Ravenala, *Strelitzia*, *Heliconia*.
- III. *LOWIOIDEAE* (l. in 2 ranks, fl. in panicles from rhiz., K tubular): *Lowia*, *Orchidantha*.

Musanga C. Sm. ex R. Br. Moraceae (III). 1 Congo.

Muscadinia Small (*Vitis* p.p.). Vitaceae. 2 N. Am.

Muscari Tourn. ex Mill. Liliaceae (v). 40 Medit., Eur., As. *M. racemosum* Mill. (grape-hyacinth) in Brit. Collateral buds in axils. Upper fls. of the raceme neuter, giving extra conspicuousness to the infl. (*cf. Centaurea Cyanus*).

Muscaria Haw. = *Saxifraga* Tourn. p.p. (Saxifr.).

Muschleria Sp. Moore. Compositae (1). 1 Angola.

Museniopsis Coulter et Rose. Umbelliferae (III. 5). 10 Mex., W. U.S.

Musenium Nutt. (*Musincum* Rafin.). Umbell. (III. 4). 3 N. Am.

Musgravea F. Muell. Proteaceae (II). 1 Queensland.

Muskit, *cf. Mesquite*.

Musk mallow, *Malva moschata* L., *Hibiscus*; - **melon**, *Cucumis Melo* L.; - **orchis**, *Herminium Monorchis* R. Br.; - **plant**, *Mimulus moschatus* Dougl.; - **thistle**, *Carduus nutans* L.

Musquash root (Am.), *Cicuta maculata* L.

Mussaenda Burm. ex L. Rubiaceae (1. 7). 35 palaeotrop. One sepal

is large, leafy, and brightly coloured, and helps to make the fl. conspicuous (*cf.* Euphorbia, Salvia).

Mussaendopsis Baill. Rubiaceae (I. 5). 1 Malaya.

Mussatia Bur. (*Bignonia* p.p.). Bignoniaceae (1). 1 Guiana.

Musschia Dum. Campanulaceae (I. 1). 2 Madeira. The capsule opens by many transv. slits between the ribs. Cult. orn. fl.

Mustard, *Brassica nigra* Koch, *Sinapis*; **hedge -**, *Sisymbrium officinale* Scop.; **treacle -**, *Erysimum cheiranthoides* L.; **- tree**, *Salvadora persica* L.

Mutabilis (Lat.), changeable (in colour, &c.).

Mutant, form arising by mutation; *cf.* de Vries, *Mutation Theory*.

Muticous, blunt.

Mutisia L. f. Compositae (12). 55 S. Am. Many climbers (a rare habit in C.) with ends of leaf-midribs prolonged into tendrils. All are shrubby with large heads of fls. Shows well chars. of § 12.

Mutumocarpon Pohl. Inc. sed. Nomen.

Myagrum (Tourn.) L. Cruciferae (2). 1 Medit., mid-Eur.

Myall (Austr.), *Acacia homalophylla* A. Cunn.

Myanthus Lindl. = *Catasetum* Rich. (Orchid.).

Mycelium, *Rafflesiaceae*.

Mycetia Reinw. (*Adenosacme* BH.). Rubiaceae (I. 7). 5 Indomal.

Mycorhiza, a fungus whose hyphae replace root-hairs in absorption (*cf.* Saprophytes), *Botrychium*, *Epipogon*, *Neottia*, *Orchidaceae*.

Myginda Jacq. Celastraceae. 15 trop. Am., W.I.

Myodocarpus Brongn. et Gris. Araliaceae (2). 12 New Caledonia.

Myonima Comm. ex Juss. Rubiaceae (II. 4). 5 Mauritius, Bourbon.

Myopordon Boiss. Compositae (11). 2 Persia.

Myoporaceae (EP., BH.). Dicots. (Sympet. Tubiflorae; Lamiales BH.). 5 gen., 100 sp. chiefly Austr. and neighbouring Is. (1 in each of following:—Sandw. Is., E. As., Mauritius, Afr., W.I.). Most are trees or shrubs, with alt. or opp. entire exstip. l., often covered with woolly or glandular hairs, frequently very reduced in size. Fls. sol., or in cymose groups, axillary, ♂, reg., or ♂. K (5), C (5), A₄, didynamous; anther loculi confluent; $\underline{G}$ (2), 2-loc. or by segmentation 3—10-loc., in the former case with 1—8, in the latter with 1, pend. anat. ovule in each loc. Drupe. Endosperm. *Chief genera*: Pholidia, Myoporum.

Myoporineae (BH.) = Myoporaceae.

Myoporum Banks et Soland. Myoporaceae. 25 Austr., E. As., Sandw. Is., Mauritius. *M. laetum* Forst. f. (N.Z.) yields useful timber.

Myoschilos Ruiz et Pav. Santalaceae. 1 Chili.

Myoseris Link = *Pterotheca* Cass. (Comp.).

Myosotidium Hook. Boraginaceae (IV. 1). 1 sp. Chatham Is.

Myosotis L. Boraginaceae (IV. 4). 35 sp. [* temp. 8 in Brit. (scorpion-grass, forget-me-not). The corolla-mouth is nearly closed by scales, and in some there is a coloured ring at the entrance forming a honey guide (see Life of Sprengel, in *Nat. Science*, Apr. 1893). The colour of the C changes as it grows older (see fam.).

Myosurandra Baill. Hamamelidaceae. 1 Madagascar.

Myosurus L. Ranunculaceae (3). 7 temp. *M. minimus* L. (mouse-tail) in Brit. Recept. much elongated.

- Myracrodruon** Allem. = *Astronium* Jacq. p.p. (Anacard.).
- Myrceugenia** Berg. (*Myrtus* p.p. *BH.*). Myrtaceae (1). 15 temp. S. Am.
- Myrcia** DC. Myrtaceae (1). 500 trop. S. Am., W.I.
- Myrcialeucas** Roj. Myrtaceae (1). 1 Argentina.
- Myrciaria** Berg. (*Eugenia* p.p. *BH.*). Myrtaceae (1). 65 trop. S. Am., W.I.
- Myriactis** Less. Compositae (3). 3 Java to Persia.
- Myrialepis** Becc. (*Plectocomiopsis* p.p.). Palm. (III. 2). 1 Perak.
- Myrianthemum** Gilg. Melastomaceae (1). 1 trop. Afr.
- Myrianthus** Beauv. Moraceae (III). 5 trop. Afr.
- Myriasporea** DC. Melastomaceae (1). 2 trop. S. Am.
- Myrica** L. Myricaceae. 40 * and Andes, esp. sub trop. *M. Gale* L. (sweet gale or bog-myrtle) in Brit. in mountain bogs. Its l. have a pleasant resinous smell when rubbed or on hot days. Fls. in short catkins, achlam. The ♂ has usu. 2 bracteoles and 4 sta. (2—16); the ♀ 2—4 bracteoles and (2) cpls. with one erect orthotr. ov. Nut, the exocarp secreting wax. No endosp. *M. cerifera* L. (N. Am., wax-myrtle, bay-berry) and others used as sources of wax; the frs. are boiled.
- Myricaceae** (*EP.*, *BH.*). Dicots. (Archichl. Myricales; Unisexuales *BH.*). Only genus *Myrica* (*q.v.*).
- Myricaria** Desv. Tamaricaceae. 10 Scandinavia to China.
- Myriocarpa** Benth. Urticaceae. 8 trop. Am. Fls. ∞, in catkins.
- Myriocephalus** Benth. Compositae (4). 8 temp. Austr.
- Myrioneuron** R. Br. Rubiaceae (1. 7). 8 Assam to Borneo.
- Myriophyllum** Ponted. ex L. Haloragidaceae. 20 cosmop.; 2 in Brit. (water milfoil). Submerged water plants, with usu. whorled much-divided l., borne on shoots that spring from the rhizome-like creeping stems. Land forms occasionally produced in some. The infl. projects above water; fls. wind-fertilised. Hibernation by winter-buds as in *Utricularia*.
- Myriopteris** Griff. Asclepiadaceae (1). 1 E. Indomal.
- Myriostachya** Hook. f. Gramineae (10). 1 Indomal.
- Myripnois** Bunge. Compositae (12). 2 N. China.
- Myristica** L. Myristicaceae. 80 palaeotrop. Trees with 2-ranked exstip. evergr. l. and dioec. reg. fls. Fr. a berry; splits by both sutures, disclosing a large seed—the nutmeg—with a curious branched red aril—the mace—around it. The nutmeg of commerce is the seed of *M. fragrans* Houtt. (*M. moschata* Thunb.), Moluccas.
- Myristicaceae** (*EP.*, *BH.*). Dicots. (Archichl. Ranales; Micrembryae *BH.*). 18 gen., 275 sp., trop., esp. As. Trees and shrubs with simple evergr. l. with oil cells, and racemes of fls., unisexual, reg., usu. 3-merous. P (3), simple (*cf.* *Monodora*); A (3—18), extr.; G 1, with 1 basal anatr. ov. Fleshy fr. Aril. Endosp. ruminant.
- Myrmecis** Blume. Orchidaceae (II. 2). 3 Java to Japan.
- Myrmecodia** Jack. Rubiaceae (II. 5). 20 E. Indomal. Epiph. with leafy stems. The base forms a large tuber, fastened to the support by adv. roots, composed of a large mass of tissue, chiefly cork, penetrated by numerous communicating galleries and chambers, inhabited by ants. These galleries are formed in a peculiar way; after germ. the

hypocotyl swells into a small parenchymatous tuber, and in this, in an axial direction, there appears a hollow cylinder of phellogen which proceeds to form cork on its *inner* side and parenchyma on the outer, thus adding to the bulk of the tuber and at the same time forming in it a hollow space (for the tissue within the cylinder of cork dies and dries up) open to the surface. Near the outer surface of the tuber is a phellogen layer acting in the ordinary way, forming a bark. As the tuber grows more phellogens appear like the first, adding more parenchyma and forming new cavities which are always in communication with the old. It has not been proved that the ants are of any service to the plant (see *Acacia*, *Cecropia*). The tuber is perhaps a water-storage apparatus.

Myrmecophily, symbiosis with ants, *cf.* *Acacia*, and *Bombacaceae*, *Cecropia*, *Clerodendron*, *Cuviera*, *Duroia*, *Humboldtia*, *Hydnophytum*, *Korthalsia*, *Macaranga*, *Maieta*, *Myrmecodia*, *Nauclea*, *Rubiaceae*, *Triplaris*.

Myrmedoma Becc. *Rubiaceae* (II. 5). 1 New Guinea. Epiphytic.

Myrmephytum Becc. *Rubiaceae* (II. 5). 1 Celebes. Epiphytic.

Myrmidone Mart. *Melastomaceae* (I). 2 trop. S. Am.

Myrobalans (gall-nuts), astringent fr. used for tanning and in medicine: **chebulic** -, *Terminalia Chebula* Retz.; **emblic** -, *Phyllanthus Emblica* L.

Myrobalanus Gaertn. = *Terminalia* L. p.p. (Combret.).

Myrocarpus Allem. *Leguminosae* (III. 1). 2 Rio de Janeiro. Yield a balsam like balsam of Peru.

Myrodia Sw. (*Quararibea* p.p. *EP.*). *Bombacaceae* (*Sterculiaceae* *BH.*). 7 trop. Am.

Myrosma L. f. *Marantaceae*. 8 S. Am.

Myrospermum Jacq. *Leguminosae* (III. 1). 1 trop. Am., W.I.

Myrothamnaceae (*EP.*, *Hamamelidaceae* p.p. *BH.*). *Dicots.* (*Archichl. Rosales*). Only genus *Myrothamnus* (*q.v.*).

Myrothamnus Welw. *Myrothamnaceae*. 2 Afr., Madag. Xero. shrubs with opp. l. and spikes of achlam., reg., dioec. fl. ♂ 4—8 sta.; ♀ G (4—3). Septic. caps. Endosp.

Myroxylon J. et G. Forst. (*Xylosma* Forst. f.). *Flacourtiaceae* (4). 45 trop. (exc. Afr.).

Myroxylon L. f. (*Toluiifera* L.). *Leguminosae* (III. 1). 8 trop. S. Am. *M. Pereirae* Klotzsch yields the medicinal balsam of Peru, *M. toluiifera* H. B. et K. the balsam of Tolu, from incisions.

Myrrh, *Commiphora*, *Myrrhis*.

Myrrha Mitch. *Umbelliferae* (inc. sed.). *Nomen*.

Myrrhidendron Coulter et Rose. *Umbelliferae* (III. 6). 1 *Costarica*.

Myrrhidium Eckl. et Zeyh. = *Pelargonium* L'Herit. p.p. (*Geran.*).

Myrrhinium Schott. *Myrtaceae* (1). 3 trop. S. Am. Ed. fr.

Myrrhis (Tourn.) L. *Umbelliferae* (III. 2). 2 Eur., Chili. *M. odorata* Scop. in Brit. (sweet cicely or myrrh), sometimes a pot-herb.

Myrsinaceae (*EP.*; *BH.* incl. *Theophrastaceae*). *Dicots.* (*Sympet. Primulales*). 32 gen., 950 sp., chiefly trop. and subtrop.; a few reach Cape Col. and N.Z. Shrubs and trees with alt. l. often in rosettes, usu. leathery, entire, exstip., with resin-passages in their tissues. Fls. in racemose infls., with 2 bracteoles, ♀ or unisexual, actinomorphic,

4- or 5-merous. K (5); C (5); A 5, epipet. and opp. to the pets.; anthers intr.; stds. sometimes present, alt. with pets. $\bar{G}$, rarely inf. or semi-inferior, 1-loc.; placenta basal or free-central with ∞ ov., semi-anatr. or semi-campylotr., sunk in placental tissue; style and stigma simple. As the fruit ripens, most of the ovules usu. abort, and there results a one- or few-seeded drupe or berry. Embryo straight or slightly curved; endosp. fleshy or horny.

Classification and chief genera (after Engler): closely allied to Primulaceae, distinguished chiefly by habit and fr.; also to Sapotaceae, but the latter have a chambered ovary.

I. *MAESOIDEAE* (ovary inf. or semi-inf., fr. many-seeded):
Maesa.

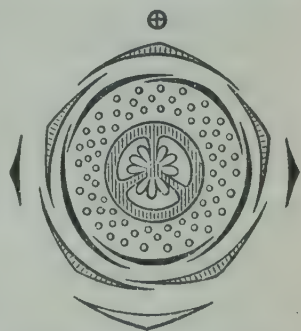
II. *MYRSINOIDEAE* (ovary sup., no stds. fr. 1-seeded):
Embelia, Myrsine, Ardisia, Aegiceras.

Myrsine L. (excl. *Rapanea* Aubl.). Myrsinaceae (II). 4 Madag. to China.

Myrsiphyllum Willd. = *Asparagus* Tourn. (Lili.).

Myrstiphyllum P. Br. = *Psychotria* L. p.p. (Rubi.).

Myrtaceae (*EP.*; *BH.* incl. *Lecythidaceae*). Dicots. (Archichl. Myrtiflorae; Myrtales *BH.*). 72 gen., 2800 sp., trop. and subtrop.; chief centres of distr. Austr. (*Leptospermoideae*) and trop. Am. (*Myrtoideae*). Trees and shrubs, varying in size from a small creeper to the giant Eucalyptus, with oil-glands in l., &c. L. usu. opp., exstip., evergr., entire. Fls. generally in cymes, δ , reg.; recept. $\pm$ hollow and united to the ovary. In *Metrosideros* and most of its allies the union is not very complete, but in the rest of the fam. it is complete, and the fl. is epig. K (4—5) or 4—5, in some gen. not opening when the fl. opens, but thrown off as a lid, usu. quin-cuncial, with the second l. post.; C 4—5, the petals often nearly circular; A ∞ , free, rarely definite, usu. bent inwards in bud; $\bar{G}$ ∞ —1-loc., with 2— ∞ anatr. or campylotr. ov. in each loc.; style and stigma simple; plac. usu. axile, rarely parietal. Berry, drupe, capsule, or nut. Seeds with no endosp. Several M. are economically important, e.g. Eucalyptus (timber, kino, oil), Eugenia (cloves, &c.), *Psidium* (guava), &c.



Floral diagram of *Myrtus communis* (after Eichler).

Classification and chief genera:

I. *MYRTOIDEAE* (berry, rarely drupe):

1. *Myrteae*: *Myrtus*, *Psidium*, *Pimenta*, *Eugenia*, *Syzygium*.

II. *LEPTOSPERMOIDEAE* (dry fruit):

1. *Leptospermeae* (ovary multi-loc.): *Metrosideros*, *Eucalyptus*, *Callistemon*, *Melaleuca*.

2. *Chamaelaucieae* (1-loc.; 1-seeded nut): *Darwinia*.

Myrtales (*BH.*). The 12th order of Polypetalae.

Myrtiflorae. The 20th order (*EP.*) of Archichlamydeae.

Myrtella F. Muell. (*Baeckea* p.p.). Myrtaceae (II. 1). 2 New Guinea.

Myrteola Berg. (*Myrtus* p.p. *BH.*). Myrtaceae (I). 8 S. Am. Ed. fr.

Myrtillocactus Console (*Cereus* p.p.). Cactaceae (III. 1). 1 Mexico.

Myrtle, *Myrtus communis* L.; **bog -**, *Myrica Gale* L.; **- scrub**, (Austr.) *Banksia*, (Tasm.) *Fagus* (*Nothofagus*) *Cunninghamii* Hook.; **- tree**, *Nothofagus*; **wax -**, *Myrica cerifera* L.; **willow -**, *Agonis*.

Myrtopsis Engl. Rutaceae (1). 1 New Caledonia.

Myrtopsis O. Hoffm. = *Eugenia* L. p.p. (Myrt.).

Myrtus (Tourn.) L. (*BH.* incl. *Ugni* Turcz.). Myrtaceae (1). 70 trop. and subtrop. *M. communis* L. (myrtle, W. As.) long nat. in Eur. Cult. orn. shrubs.

Mystacidium Lindl. Orchidaceae (11. 20). 35 Afr. Cult. orn. fl.

Mystropetalon Harv. Balanophoraceae. 2 S. Afr.

Mystroxydon Eckl. et Zeyh. (*Elaeodendron* Jacq.). Celastraceae. 15 trop. and S. Afr., Madag.

Myxopyrum Blume. Oleaceae. 7 Malaya.

Myzodendraceae (*EP.*; *Santalaceae* p.p. *BH.*). Dicots. (Archichl. Santalales). Only genus *Myzodendron*.

Myzodendron (Banks) Soland. Myzodendraceae. 10 Chili, Patagonia. Semi-parasitic green shrubs, like Loranthaceae, with alt. l. and very small unisexual fls. ♂ naked, of 2- 3- 1 sta.; ♀ with P (?) concrescent with sides, $\bar{G}$ (3) with 3 stigmas and axile plac., bearing 3 ovules with no integument. Fr. with 3 angles or wings and feather-like hairs in angles.

Myzorhiza Phil. (*Aphyllon* Mitch.). Orobanchaceae. 10 Am.

Na (Ceylon), *Mesua ferrea* L.

Nabalus Cass. (*Prenanthes* Vaill.). Compositae (13). 5 N. Am.

Nabiasodendron Pitard (*Gordonia* p.p.). Theaceae. 9 Indomal.

Nablonium Cass. Compositae (4). 1 Tasmania.

Nacrea Aven Nelson. Compositae (4). 1 Wyoming.

Naegelia Regel (*Smithiantha* *EP.*). Gesneriaceae (11). 6 Mexico. They form subterranean runners, covered with scaly l. Cult. orn. fl.

Nageia Gaertn. = *Podocarpus* L'Hérit. (Conif.).

Nagelia Lindl. (*Cotoneaster* p.p. *BH.*). Rosaceae (11). 2 Mexico.

Naiadaceae (*EP.*; *Naiadeae* *BH.* incl. *Potamogetonaceae*, *Naiadaceae*, *Aponogetonaceae*, *Juncaginaceae*). Monocot. (Helobieae). Only genus *Najas* (*q.v.*).

Naiadeae (*BH.*; cf. *Naiadaceae*). Monocots. (Apocarpae). 16 gen., 150 sp. cosmop. Water or marsh herbs, with rad., alt., opp., or whorled l. and small fls. in racemose infl. ♂ or unisexual. P 0 or 1-6, A 1-6, rarely connate, G 1-6, rarely slightly connate, style short, ov. 2-∞, very rarely 1, micropyle downwards. Dry fr.: seed exalbum. For genera cf. fams. mentioned above.

Naiocrene Rydberg (*Claytonia* p.p.). Portulacaceae. 1 N. Am.

Najas L. Naiadaceae. 35 cosmop.; 2 in Brit. Freshwater annuals, submerged, with slender stems and opp. usu. toothed linear l. Fls. unisexual; ♂ a single anther, term. on the axis and 1- or 4-loc. enclosed in two sheathing Ps. ♀ fl. $\bar{G}$ 1 naked or surrounded by a perianth-like organ. Pollination occurs under water as in *Zostera*, but the pollen is spherical. Ovule 1, anatropous, term. on the axis. Embryo straight; no endosp.

Naked (fl.), without P.

Nama L. Hydrophyllaceae. 30 Am., Hawaiian Is.

Namation Brand (*Nama* p.p.). Scrophulariaceae (11. 6). 1 Mexico.

- Namatium** (Cl.), a brook formation.
- Nananthera** DC. Compositae (7). 1 Corsica.
- Nandina** Thunb. Berberidaceae. 1, *N. domestica* Thunb., China, Japan.
P (incl. 2 whorls of honey l.) in 9 whorls, showing more petaloid structure as they near the centre. Cult. orn. fl.
- Nannoglottis** Maxim. Compositae (8). 1 N. China.
- Nannorrhops** H. Wendl. Palmaceae (1. 2). 1 N.W. India, Persia.
- Nanny berry**, *Viburnum*.
- Nanochilus** K. Schum. (*Hedychium* p.p.). Zingiber. (1). 2 Mal. Arch.
- Nanocnide** Blume. Urticaceae (1). 2 Japan, Corea.
- Nanodea** Banks. Santalaceae. 1 S. temp. S. Am.
- Nanolirion** Benth. Liliaceae (III). 1 S. Afr.
- Nanophyton** Less. Chenopodiaceae (B). 1 W. As.
- Nanostelma** Baill. Asclepiadaceae (II. 1). 1 Congo.
- Nanothamnus** T. Thoms. Compositae (4). 1 Bombay.
- Nanus** (Lat.), dwarf.
- Napaea** L. Malvaceae (2). 1 N. Am. Dioec. Fibre from bark.
- Napeanthus** Gardn. Gesneriaceae (1). 8 trop. Am.
- Napiform**, turnip-shaped.
- Napoleona** Beauv. Lecythidaceae. 7 W. trop. Afr. The fl. resembles that of *Passiflora*, owing to the corona of stds. G 5—20-loc. Berry.
- Naravelia** DC. (*Clematis* p.p.). Ranunculaceae (3). 4 Indomal.
- Narcissus** (Tourn.) L. Amaryllidaceae (1). 40 Eur., Medit., As. Several cult. orn. fl., e.g. *N. Pseudo-Narcissus* L., the daffodil, *N. poeticus* L., the poet's Narcissus, *N. Jonquilla* L., the jonquil, *N. Tazetta* L., and others. Corona well developed, free from the A (see fam.).
- Narcotics**, sleep-producing drugs, *Cannabis*, *Hyoscyamus*, *Papaver*.
- Nard grass**, *Nardus stricta* L.
- Nardoo**, *Marsilea*.
- Nardophyllum** Hook. et Arn. Compositae (3). 10 Andes.
- Nardosmia** Cass. = *Petasites* Tourn. (Comp.).
- Nardostachys** DC. Valerianaceae. 2 Himal. *N. Jatamansi* DC., the spikenard, has very fragrant rhizomes.
- Narduroides** Rouy (*Nardurus* p.p.). Gramineae (10). 1 France.
- Nardurus** Reichb. = *Festuca* Tourn. p.p. (Gram.).
- Nardus** Linn. Gramineae (12). 1 Eur., W. As., *N. stricta* L., the nard or mat-grass, common on the drier grass moors in Brit. Infl. markedly unilateral (unusu. in § 12).
- Naregamia** Wight et Arn. Meliaceae (III). 1 India.
- Nargedia** Bedd. Rubiaceae (1. 8). 1 Ceylon.
- Narras**, *Acanthosicyos horrida* Welw.
- Narthecium** Moehr. Liliaceae (1). 4 N. temp.; *N. ossifragum* Huds. (bog-asphodel), in Brit. It has a sympodial rhiz. and isobil. l. The fl. is conspicuous, but contains no honey (class Po).
- Narthex** Falc. = *Ferula* Tourn. [*N. asafoetida* Falc. = F. *Narthex*].
- Narvalina** Cass. Compositae (5). 2 W.I., S. Am.
- Naseberry**, *Achras Sapota* L.
- Nashia** Millspaugh. Verbenaceae (1). 1 W.I. L. used as tea.
- Nasonia** Lindl. (*Centropetalum* B.H.). Orchid. (II. 20). 3 Colombia.
- Nassauvia** Comm. ex Juss. Compositae (12). 50 Andes.
- Nassella** E. Desv. (*Oryzopsis* p.p. B.H.). Gramineae (8). 10 Andes.

Nasturtium L. Cruciferae (2). 50 cosmop.; 4 in Brit., including *N. officinale* R. Br., the water-cress. In the perennial sp. buds arise at the base of the year's shoot, and take root while still attached to the parent. The adv. roots are said to arise exogenously.

Nasturtium (of gardens), *Tropaeolum*.

Nastus Dioscorides ex Lunell. Gramineae (5). 1 N. Am.

Nastus Juss. Gramineae (13). 3 Mascarene Is.

Natans (Lat.), swimming (under water).

Nathusia Hochst. (*Schrebera* Roxb.). Oleaceae. 4 Afr., India.

Natsiatopsis S. Kurz. Icacinaceae. 1 Burma.

Natsiatum Buch.-Ham. Icacinaceae. 1 Himalaya.

Natural history, ecology; - **order**, a group of several allied families, e.g. *Ranales*, *Rosales*; - **selection**, survival of the fittest; - **system**, that which tries to classify plants according to their relationships.

Naturalisation, establishment in a new country; **naturalised weeds**, *Ageratum*, *Cactaceae*, *Cynara*, *Eichhornia*, *Elodea*, *Galinsoga*, *Lactuca*, *Mimosa*, *Opuntia*, *Tithonia*, *Xanthium*.

Nuclea, L. Rubiaceae (1. 6). 35 trop. As., Polynes. Fls. in spherical heads. *N. lanceolata* Blume (*N. purpurea* Roxb.) has hollow swollen portions of stem, below infls., inhabited by ants (cf. *Acacia*).

Naudinia Planch. et Lind. Rutaceae (1). 1 Colombia.

Naudiniella Krasser (*Astronia* p.p.). Melastom. (11). 6 Polyn.

Naumannia Warb. (*Riedelia* p.p. *EP.*). Zingiberaceae (1). 1 N.G.

Naumburgia Moench (*Lysimachia* p.p. *BH.*). Primul. 1 N. temp.

Nautilocalyx Linden = *Episcia* Mart. p.p. (Gesn.).

Nautonia Decne. Asclepiadaceae (11. 1). 1 S. Brazil.

Navarretia Ruiz et Pav. (*Gilia* p.p.). Polemoniaceae. 40 Am., esp. N.

Navia Schult. f. (*Dyckia* p.p. *B.H.*). Bromeliaceae (2). 2 trop. S. Am.

Navicular, boat-shaped.

Naxiandra Krasser. Melastomaceae (111). 4 Malaya.

Neactelis Rafin. Compositae (inc. sed.). 1 N. Am.

Nealchornea Huber. Euphorbiaceae (A. 11. 2). Upper Amazon.

Nearctic, American arctic.

Nebelia Neck. (*Raspalia* Brongn. *EP.*). Bruniaceae. 6 S. Afr.

Necepsia Prain. Euphorbiaceae (A. 11. 1). 1 trop. Afr.

Neckia Korth. Ochnaceae (*Violaceae* *BH.*). 6 Indomal.

Neck-lace tree, *Ormosia*; - **weed** (Am.), *Veronica peregrina* L.

Nectandra Roland. Lauraceae (1). 70 trop. and S. subtrop. Am. *N. Rodiaei* Hook. (greenheart) and others good timber.

Nectarine, *Prunus persica* Stokes, var.

Nectaripetalum Pohl. Inc. sed. Nomen.

Nectaropetalum Engl. Linaceae. 2 trop. Afr.

Nectary, a honey-secreting gland, usu. floral, *Aconitum*, *Alisma*, *Allium*, *Aquilegia*, *Berberidaceae*, *Borago*, *Campanulaceae*, *Compositae*, *Delphinium*, *Eranthis*, *Labiatae*, *Leguminosae*, *Marcgravia*, *Nigella*, *Norantea*, *Ranunculaceae*, *Tilia*, sometimes **extra-floral**, *Aleurites*, *Convolvulaceae*, *Prunus*, *Triumfetta*, *Turneraceae*, *Viola*; **sham-**, *Lopezia*, *Parnassia*.

Nectouxia H. B. et K. Solanaceae (2). 1 Mexico.

Neea Ruiz et Pav. Nyctaginaceae. 30 trop. S. Am., W.I. The l. of *N. theifera* Oerst. (caparrosa) are used as tea, and yield a black dye.

- Needhamia** R. Br. Epacridaceae (3). 1 W. Austr.
- Needle, Adam's, Yucca**; **double** -. *Coniferae*, *Sciadopitys*; - **gorse**, *Genista*; - **leaf**, *Coniferae*, *Xerophytes*.
- Neem, nim**, *Melia Azadirachta* L. (*Azadirachta indica* A. Juss.).
- Neeragrostis** Bush (*Poa* p.p.). Gramineae (10). 2 Am.
- Neesia** Blume. Boinbacaceae. 5 Malaya.
- Negretia** Ruiz et Pav. = *Mucuna* Adans. (Legum.).
- Negria** Chiov. = *Joannegria* Chiov. (Gram.).
- Negria** F. Muell. Gesneriaceae (1). 1 Lord Howe I.
- Negundo** Moench (*Acer* p.p. *EP.*, *q.v.*). Aceraceae. 4 N. temp.
- Neillia** D. Don. Rosaceae (1. 1). 3 Himal., S. China.
- Neja** D. Don = *Hysterionica* Willd. (Comp.).
- Nelitris** Spreng. = *Decaspermum* Forst. (Myrt.).
- Nelsia** Schinz (*Sericocoma* p.p.). Amarantaceae (2). 1 S. trop. Afr.
- Nelsonia** R. Br. Acanthaceae (1). 1 palaeotrop.
- Nelumbium** Juss. Nymphaeaceae (1). 2, *N. luteum* Willd., Pennsylvania to Colombia, and *N. speciosum* Willd. (*N. nuciferum* Gaertn.), Japan to Caspian and N.E. Austr. The latter is the sacred Lotus, no longer found in the Nile. Sculptures of it are common in Egyptian temples, and it is sacred in India, Tibet, China, &c. Both are marsh plants; the fls., which are very large and handsome, and the big peltate slightly hairy l., stand above the water and do not float upon it. The rhiz. bears 'triads' of leaves; after a long internode comes a scaly-l. on the lower side, then one on the upper side, immediately followed by a foliage-l. with ochreate stipule, then a long internode again, and so on. This peculiar leaf-arrangement is quite unique. From the axil of the second scale-l. springs the fl., from that of the foliage-l. a branch. The fl. has no bracteoles. The first P-leaf is ant., the second post., then follow 2 lat.; these 4 are sometimes regarded as a K. They are followed by numerous petals and sta., acyclically arranged. In the centre of the fl. stands the obconical G, a large number of cpls. embedded separately in the top of the swollen recept. Each contains 1 pend. ovule. The recept. becomes dry and very light, and the achenes separate from it, as the fruit ripens. It breaks off bodily from the stalk and floats about until decay sets free the fruits, which sink to the bottom of the pond. There is no endosp. or perisperm. The seeds of *N. speciosum* are used as food in Cashmere, &c.
- Nelumbo** (Tourn.) Adans. = *Nelumbium* Juss. (Nymph.).
- Nemacaulis** Nutt. Polygonaceae (1. 1). 1 California.
- Nemacladus** Nutt. Campanulaceae (11). 3 Calif., Mexico.
- Nemastylis** Nutt. Iridaceae (11). 10 Am. Cult. orn. fl.
- Nematanthera** Miq. (*Piper* p.p. *BH.*). Piperaceae. 2 Guiana.
- Nematanthus** Schrad. Gesneriaceae (1). 6 Brazil.
- Nematolepis** Turcz. Rutaceae (1). 2 W. Austr.
- Nematopogon** Bureau et K. Schum. (*Digomphia* p.p.). Bignoniaceae (2). 2 Brazil, Guiana.
- Nematoscladium** H. Wolff. Umbelliferae (111. 4). 1 Mexico.
- Nematostylis** Hook. f. Rubiaceae (11. 1). 1 Madag.
- Nemesia** Vent. Scrophulariaceae (11. 3). 50 S. Afr. Cult. orn. fl.
- Nemexia** Rafin. (*Smilax* p.p.). Liliaceae (x1). 10 U.S.

- Nemopanthus** Rafin. Aquifoliaceae. 1 N.E. Am.
Nemophila Nutt. Hydrophyllaceae. 30 N. Am., often cult. orn. fl.
Nemoralis (Lat.), living in woods.
Nemuaron Baill. Monimiaceae. 2 New Caledonia.
Nenax Gaertn. Rubiaceae (II. 7). 6 S. Afr.
Nenga H. Wendl. et Drude. Palmaceae (IV. 1). 12 Malaya.
Nengella Becc. (*Nenga* p.p. *EP.*). Palmaceae (IV. 1). 2 Malaya.
Nenuphar Link = *Nuphar* Sm. (Nymph.).
Neo- (Gr. pref.), new.
Neobaronia Baker (*Phylloxylon* Baill.). Leguminosae (III. 8). 2 Madagascar. Timber hard.
Neobeckia Greene (*Nasturtium* p.p.). Cruciferae (2). 1 N. Am.
Neobenthamia Rolfe. Orchidaceae (II. 5). 1 Zanzibar.
Neobertiera Wernham. Rubiaceae (I. 8). 1 Brit. Guiana.
Neobiondia Pampan. Phytolaccaceae. 1 China.
Neobolusia Schlechter (*Brachycorythis* p.p.). Orchidaceae (II. 1). 1 S. Afr.
Neoboutonia Muell.-Arg. Euphorbiaceae (A. II. 2). 4 trop. Afr.
Neobrittonia Hochr. (*Sida* p.p.). Malvaceae (2). 1 Mexico.
Neobuchia Urban. Bombacaceae. 1 W.I.
Neocastela Small (*Castela* p.p.). Simarubaceae. 1 S. Domingo.
Neocentema Schinz (*Centema* p.p.). Amarantaceae (2). 2 E. Afr.
Neocheiropteris Christ. Polypodiaceae. 1 Yunnan.
Neochevaliera A. Chevalier et Beille. Euph. (A. I. 1). 1 Congo.
Neoclia Nor. Inc. sed. Nomen.
Neocogniauxia Schlechter. Orchidaceae (II. 6). 2 W.I.
Neocollettia Hemsl. Leguminosae (III. 7). 1 Burma.
Neocouma Pierre (*Tabernaemontana* p.p.). Apocyn. (I. 1). 1 Brazil.
Neocracca O. Ktze. (*Cracca* p.p.). Leguminosae (III. 6). 1 Bolivia.
Neodeutzia Small (*Deutzia* p.p.). Saxifragaceae (III). 2 Mexico.
Neodielsia Harms. Leguminosae (III. 6). 1 China.
Neodonnellia Rose (*Donnellia* Clarke). Commelinaceae. 1 C. Am.
Neodregia C. H. Wright. Liliaceae (1). 1 S. Afr.
Neodryas Reichb. f. Orchidaceae (II. 19). 2 trop. S. Am.
Neodypsis Baill. Palmaceae (IV. 1). 2 Madag.
Neoglaziovia Mez (*Dyckia* p.p.). Bromeliaceae (4). 2 Brazil.
Neogoetzea Pax. Euphorbiaceae (A. I. 2). 1 trop. Afr.
Neogoezea Hemsl. Umbelliferae (III. 4). 3 Mexico.
Neogyna Reichb. f. (*Coelogyne* p.p. *BH.*). Orchid. (II. 3). 1 Himal.
Neohallia Hemsl. Acanthaceae (IV. B). 1 S. Mexico.
Neojatropha Pax (*Jatropha* p.p.). Euphorb. (A. II. 3). 2 E. trop. Afr.
Neojobertia Baill. Bignoniaceae (1). 1 Piahy.
Neojunghunia Koorders. Ericaceae (III. 2). 1 New Guinea.
Neokoehleria Schlechter. Orchidaceae (II. 19). 2 Peru.
Neolacis Wedd. in DC. = *Apinagia* Tul. (Podost.).
Neolauchea Kränzl. Orchidaceae (II. 6). 1, habitat?
Neolehmannia Kränzl. Orchidaceae (II. 6). 2 Ecuador, Peru.
Neolindenia Baill. (*Louleridium* p.p. *EP.*). Acanth. (IV. A). 1 Mex.
Neolindleya Kränzl. (*Platanthera* p.p.). Orchid. (II. 1). 1 N.E. As.
Neolitsea Merrill (*Litsea* p.p.). Lauraceae (1). 3 Indomal.
Neoluederitzia Schinz. Zygophyllaceae. 1 S.W. Afr.

- Neomacfadyena** Baill. Bignoniaceae (1). 1 Cuba.
- Neomanniophyton** Pax et K. Hoffm. Euphorbiaceae (A. II. 2). 12 W. Afr.
- Neomazaea** Urb. (*Rondeletia* p.p.). Rubiaceae (I. 3). 1 W.I.
- Neomezia** Votsch (*Deherainia* p.p.). Theophrastaceae. 1 W.I.
- Neomoorea** (*Moorea*) Rolfe. Orchidaceae (II. 13). 1 Andes.
- Neomuelleria** Briquet. Labiatae (VII). 2 S.W. Afr.
- Neonauclea** Merrill = *Nauclea* L. (Rubi.).
- Neonelsonia** Coulter et Rose. Umbelliferae (III. 4). 2 Mexico.
- Neonicholsonia** Dammer. Palmaceae (IV. 1). 2 C. Am.
- Neopatessonina** Schönland. Liliaceae (V). 1 Natal.
- Neophloga** Baill. (*Hyophorbe* p.p.). Palmaceae (IV. 1). 7 Madag.
- Neopieris** Britton (*Andromeda* p.p.). Ericaceae (II. 1). 2 E. N. Am.
- Neopringlea** S. Wats. (*Llavea* Liebm.). Celastraceae? Simarubaceae? 1 Mexico.
- Neopycnocomma** Pax. Euphorbiaceae (A. II. 2). 1 Spanish Guinea.
- Neorautanenia** Schinz. Leguminosae (III. 10). 1 trop. Afr.
- Neoroepera** Muell.-Arg. Euphorbiaceae (A. I. 1). 2 Queensland.
- Neosabicea** Wernham. Rubiaceae (I. 7). 1 Colombia.
- Neoschimpera** Hemsl. Rubiaceae (II. 5). 1 Seychelles.
- Neoschumannia** Schlechter. Asclepiadaceae (inc. sed.). 1 trop. Afr.
- Neosciadium** Domin (*Hydrocotyle* p.p.). Umbellif. (I. 1). 1 Austr.
- Neoscortechia** O. Ktze., **Neoscortechinia** Pax = *Scortechinia* Hook. f. (Euph.).
- Neosilvia** Pax (*Silvia* Aliem.). Lauraceae (II). 2 Brazil.
- Neosloetiopsis** Engl. (*Sloetiopsis* p.p.). Morac. (I). 1 Cameroons.
- Neosparton** Griseb. Verbenaceae (1). 2 temp. S. Am.
- Neostapfia** Davy. Gramineae (10). 1 N. Am.
- Neostyphonia** Shafer (*Styphonia* p.p.). Anacard. (3). 1 Calif.
- Neothorelia** Gagnep. Cappariaceae (II). 1 Laos.
- Neotinea** Rchb. f. (*Habenaria* p.p. *BH.*). Orchidaceae (II. 1). 1 Medit., W. Eur.
- Neotreleasia** Rose. Commelinaceae. 3 N. Am.
- Neotropical**, New World tropical.
- Neottia** L. Orchidaceae (II. 2). 3 temp. Eur. and As.; *N. Nidus-avis* Rich. (bird's-nest orchis) in Brit. is a leafless saprophyte, the rhiz. giving off a number of roots which form a nest-like mass in the humus, with endotropic mycorrhiza. The older roots may throw off their caps and form shoots (*cf.* *Anthurium*). Fl. as in *Listera* (Darwin's *Orchids*, p. 125).
- Neotuerckheimia** Donnell-Smith. Bignoniaceae (4). 1 Guatemala.
- Neotysonia** Dalle Torre et Harms. Compositae (4). 1 Austr.
- Neourbania** Fawcett et Rendle. Orchidaceae (II. 6). 1 Jamaica.
- Neowashingtonia** Sudw. (*Washingtonia* p.p.). Palm. (I. 2). 5 N. Am.
- Nepenthaceae** (*EP.*, *BH.*). Dicots. (Archichl. Sarraceniales; Multi-ovulatae Terrestres *BH.*). Only genus *Nepenthes* (*q.v.*).
- Nepenthandra** Sp. Moore. Euphorbiaceae (A. II. 5). 1 Burma.
- Nepenthes** L. Nepenthaceae. 50 palaeotrop. (pitcher plants). Most are herbs growing in boggy places and climbing by aid of tendrils, prolongations of the leaf-midribs. The end of the tendril develops as a rule into a pitcher, with a lid projecting over the mouth, but not

closing it except in the young state. The pitcher develops by an invagination of the upper surface of the tip of the l.; the tip takes no part in the development, and the lid grows out below it. The edge of the pitcher is curved inwards; at the entrance are numerous honey-glands, and for some distance below it are other glands, sunk in little pits on the inner surface. Insects attracted by the honey (or by the bright colour) gradually work their way downwards among the glands, and presently get upon the slippery lower part and ultimately into the water at the bottom of the pitcher, where they are drowned. The plant absorbs the products of their decay.

Many are epiphytic. In *N. ampullaria* Jack there are two kinds of l. (cf. *Cephalotus*), some with tendrils and no pitchers; others, as stalked pitchers arranged in a radical rosette.

Fls. dioec., reg., in racemes or with the secondary branching cincinnal; no bracts. P 2 + 2; in the ♂ fl. sta. (4—16) in a column; in the ♀ fl. $\bar{G}$ (4), 4-loc.; ovules ∞ , anat., in many rows. Capsule leathery, loculic. Seeds light with long hair-like processes at the ends; embryo straight, in fleshy endosp. Many sp. and hybrids cult. [See Goebel's *Pflanzenbiol. Sch.*, Macfarlane in *Ann. of Bot.* III. and VII., and cf. *Sarracenia*, *Cephalotus*.]

Nepeta Riv. ex L. (incl. *Glechoma* L.). Labiatae (VI). 150 *.
N. Glechoma Benth. (ground-ivy) and *N. Cataria* L. (cat-mint) in Brit. Fls. gynodioecious.

Nephelaphyllum Blume. Orchidaceae (II. a. II). 6 E. As.

Nephelium L. (excl. *Litchi* Sonner.). Sapindaceae (I). 25 Indomal.
N. lappaceum L. (rambutan) cult. ed. fr. *N. Longana* Cambess. (longan) and others also used. [*N. Litchi* Cambess, see *Litchi*.]

Nephelochloa Boiss. Gramineae (IO). 1 W. As.

Nephradenia Decne. Asclepiadaceae (II. 3). 5 Braz. to Mex.

Nephrocarpus Dammer. Palmaceae (IV. I). 1 New Caled.

Nephrocarya Candargy. Boraginaceae (IV. 3). 1 Greece.

Nephrodium Rich. = *Dryopteris* Adans. p.p. (Polypod.).

Nephrolepis Schott. Polypodiaceae. 18 trop., and Japan, N.Z. They produce runners like strawberry, but not axillary, which root and give new pl.

Nephropetalum Robinson et Greenman. Sterculiaceae. 1 N. Am.

Nephrophyllidium Gilg (*Menyanthes* p.p. BH., *Fauria* p.p. EP.).
Gentianaceae (II). 1 N.W. Am., Japan.

Nephrophyllum A. Rich. Convolvulaceae (I). 1 Abyssinia.

Nephrosperma Balf. f. Palmaceae (IV. I). 1 Seychelles.

Nephrostigma Griff. Anonaceae (inc. sed.). Nomen.

Nephthytis Schott. Araceae (IV). 4 trop. W. Afr.

Nepsera Naud. Melastomaceae (I). 1 trop. S. Am., W.I.

Neptunia Lour. Leguminosae (I. 4). 10 trop. and subtrop. *N. oleracea*
Lour. has a floating stem, rooting at the nodes, and covered by aerenchyma. The l. are sensitive like those of *Mimosa*. Fls. in heads, the lower ♂, or neuter with petaloid stds.

Neraudia Gaudich. Urticaceae (3). 3 Hawaiian Is.

Neriacanthus Benth. Acanthaceae (IV. B). 1 Jamaica.

Neriandra A. DC. = *Skytanthus* Meyen (Apocyn.).

Nerine Herb. Amaryllidaceae (I). 15 Cape Colony. Cult. orn. fl.

- Nerisyrenia** Greene (*Greggia* EP.). Cruciferae (4). 2 W. N. Am.
- Nerium** L. Apocynaceae (II. 1). 3 Medit. to Japan. *N. Oleander* L. (oleander) has pits on the lower surface of the evergr. l., in which the stomata are sunk (several in each) and covered with hairs, reducing transpiration. Fls. suited to long-tongued moths.
- Nerophila** Naud. Melastomaceae (1). 1 Senegambia.
- Nertera** Banks et Soland. Rubiaceae (II. 7). 10 Andes, N.Z., Austr., Sandw. Is., Malaya.
- Nerve** (l.), the vascular bundles which run through it.
- Nervilia** Comm. ex Gaudich. (*Pogonia* p.p. BH.). Orchidaceae (II. 2). 25 trop. and subtrop. |*.
- Nesaea** Comm. ex Juss. Lythraceae. 30 Afr., Austr., As., N. Am.
- Nesiota** Hook. f. Rhamnaceae. 1 St Helena.
- Neslia** Desv. Cruciferae (4). 1 Eur., N. As., Medit.
- Nesodoxa** Calest. (*Eremopanax* p.p.). Araliaceae (1). 1 New Caled.
- Nesodraba** Greene (*Draba* p.p.). Cruciferae (4). 4 W. N. Am.
- Nesogenes** A. DC. Verbenaceae (3). 2 Rodrigues, Polynesia.
- Nesogordonia** Baill. Inc. sed. 1 Madag.
- Nesothamnus** Rydberg (*Perityle* p.p.). Compos. (6). 1 Lower Calif.
- Nestlera** Spreng. Compositae (4). 10 Cape Colony.
- Nettle**, *Urtica*; **dead -**, *Lamium*; **devil or fever -**, *Laportea*; **hemp -**, *Galeopsis*; **Nilgiri -**, *Girardinia*; **Spanish -** (W.I.), *Bidens*; **- tree**, *Celtis*, (W.I.) *Pilea*.
- Nettoa** Baill. Tiliaceae. 1 Austr.
- Net-veined**, with irreg. network of veins, most Dicots.
- Neuburgia** Blume. Apocynaceae (I. 1). 1 Malaya.
- Neumannia** A. Rich. (*Aphloia* BH.). Flacourtiaceae (4). 4 Madag., S. Afr.
- Neuracanthus** Nees. Acanthaceae (IV. A). 10 palaeotrop.
- Neurachne** R. Br. Gramineae (3). 3 Austr.
- Neurada** L. Rosaceae (iv). 1 Medit. to E. Ind.
- Neurocalyx** Hook. Rubiaceae (1. 2). 6 Ceylon, Borneo.
- Neurocarpaea** P. Br. (*Pentas* p.p.). Rubiaceae (1. 2). 3 Afr., Madag.
- Neurocarpum** Desv. = *Clitoria* L. p.p. (Legum.).
- Neurolaena** R. Br. Compositae (8). 2 W.I., Colombia.
- Neurolobium** Baill. Apocynaceae (1. 3). 1 Brazil.
- Neuroloma** Andr. ex DC. = *Parrya* R. Br. (Crucif.).
- Neuropeltis** Wall. Convolvulaceae (1). 4 trop. As. and Afr.
- Neurosoria** Mett. Polypodiaceae. 1 trop. Austr.
- Neurotheca** Salisb. ex B. et H. f. Gentian. (1). 5 trop. Afr., S. Am.
- Neustanthus** Benth. = *Pueraria* DC. p p. (Legum.).
- Neuter**, without fertile sporophylls, *Centaurea*, *Hydrangea*, *Muscari*, *Viburnum*.
- Neuwiedia** Blume. Orchidaceae (I. 1). 6 E. Indomal.
- Nevesarmondia** K. Schum. (*Pithecoctenium* p.p.). Bignoniaceae (1). 1 Brazil.
- Neviusia** A. Gray. Rosaceae (III. 1). 1 Alabama.
- Newberrya** Torr. Pyrolaceae. 1 Oregon, Washington.
- Newbouldia** Seem. Bignoniaceae (2). 3 trop. W. Afr.
- Newcastlia** F. Muell. Verbenaceae (3). 7 trop. Austr.
- New Jersey tea**, *Ceanothus*.

- Newtonia** Baill. Leguminosae (I. 4). 2 trop. W. Afr.
- Newtonia** O. Hoffm. (*Antunesia* BH., *Gongrothamnus* EP.). Compositae (8). 1 Angola.
- New Zealand flax, hemp**, *Phormium tenax* Forsk.; -- daisy bush, *Oleandra*; -- holly, *Osmanthus*; -- pincushion, *Raoulia*; -- spinach, *Tetragonia expansa* Murr.
- Neyraudia** Hook. f. Gramineae (10). 1 trop. As., Afr., Madag.
- Ngai camphor**, *Blumea balsamifera* DC.
- Nicandra** Adans. Solanaceae (1). 1 Peru, *N. physaloides* Gaertn. Ov. divided in an irreg. way by plac. Berry nearly juiceless and with ∞ seeds, enclosed in the enlarged K. Cult. orn. fl.
- Nicker bean**, *Caesalpinia bonducella* Flem., *Entada*.
- Niclouxia** Battandier. Compositae (4). 1 S.W. Sahara.
- Nicobar breadfruit**, *Pandanus Leram* Jones.
- Nicodemia** Tenore. Loganiaceae. 3 Madagascar, Mascarene Is.
- Nicolasia** Sp. Moore. Compositae (4). 3 S.W. trop. Afr.
- Nicolletia** A. Gray. Compositae (6). 2 S.W. U.S.
- Nicolsonia** DC. = *Desmodium* Desv. p.p. (Legum.).
- Nicoteba** Lindau (*Justicia* p.p.). Acanthaceae (IV. B). 5 palaeotrop.
- Nicotiana** L. Solanaceae (4). 45 Am., Polynes., 1 Austr. *N. Tabacum* L., cult. in warm countries, esp. U.S., Cuba, Sumatra, Egypt, Brazil, etc., is the tobacco, grown as an annual crop; the l. are gathered, hung up and slowly dried, then packed in heaps and fermented slightly. Different varieties are grown, and usu. in different places, for cigar, cigarette, and pipe tobacco. *N. rustica* L. and others are also used.
- Nidorella** Cass. Compositae (3). 20 Abyssinia to S. Afr.
- Nidularium** Lem. (*Karatas* BH.). Bromeliaceae (4). 15 Brazil.
- Niebuhrria** DC. (*Maerua* p.p. EP.). Cappariaceae (II). 12 trop. As., Afr.
- Niederleinia** Hieron. Frankeniaceae. 1 temp. S. Am.
- Niedzwedzkia** B. Fedtschenko = *Sesamum* L. p.p. (Pedal.).
- Niemeyera** F. Muell. Sapotaceae (1). 1 trop. E. Austr.
- Nierembergia** Ruiz et Pav. Solanaceae (4). 20 trop. and subtrop. Am.
- Nietneria** Klotzsch et R. Schomb. Liliaceae (1). 1 Brit. Guiana.
- Nigella** (Tourn.) L. Ranunculaceae (2). 16 Medit., Eur., often cult. orn. fl. (love-in-a-mist, devil-in-a-bush). Annuals. Alt. with the K is an invol. of 5 l. Within the coloured K are 5—8 nectaries, pocket-like structures with lids which prevent small insects from reaching the honey. The cpls. are more or less completely united but have separate styles; they give a caps. fr. Fl. protandrous.
- Niger** (Lat.), black.
- Niger seed**, *Guizotia abyssinica* Cass.
- Night-flowering cactus**, *Cereus grandiflorus* Mill., &c.
- Nightshade**, *Solanum*; **deadly -**, *Atropa Belladonna* L.; **enchanter's -**, *Circaea lutetiana* L.
- Nigrescens, nigricans** (Lat.), blackish.
- Nigribicchia** $\times$ E. G. Camus, Beyer, et R. Camus. Orchidaceae. Hybrid
- Nigritella-Habenaria** (Bicchia).
- Nigritella** Rich. (*Habenaria* p.p. BH.). Orchidaceae (II. 1). 1 Mts. of Eur.

Nilgiri nettle, *Girardinia heterophylla* Decne.

Nim, neem, *Azadirachta indica* A. Juss. (*Melia Azadirachta* L.).

Nimble Will (Am.), *Muehlenbergia diffusa* Schreb.

Niopo tree (W.I.), *Piadenia*.

Nipa Thunb. Palmae (vi). 1 palaeotrop., *N. fruticans* Thunb., a low-growing palm with monoec. infl. Fr. woody, combined into a dense head; each contains one seed. It grows in brackish water and is very char. upon trop. coasts. [See *Phytelephas*.]

Niphaea Lindl. Gesneriaceae (ii). 2 Guatemala, Cuba.

Nipholobolus Kaulf. = *Cyclophorus* Desv. (Polypod.).

Nipplewort, *Lapsana communis* L.

Nirarathamnos Balf. f. Umbelliferae (iii. 5). 1 Socotra.

Nirwamia Rafin. Euphorbiaceae (inc. sed.). 1 Japan.

Nisa Noronha = *Homalium* Jacq. p.p. (Flac.).

Nissolia Jacq. Leguminosae (iii. 7). 7 trop. and subtrop. Am.

Nitidus (Lat.), lustrous, smooth and shining.

Nitraria L. Zygophyllaceae. 3 palaeotrop.

Nitrophila S. Wats. Chenopodiaceae (A). 1 W. N. Am.

Nivalis (Lat.), growing near snow; **niveus** (Lat.), snow-white.

Nivenia R. Br. (*Paranomus* p.p. EP.). Proteaceae (i). 12 S. Afr.

Nivenia Vent. (*Aristea* BH.). Iridaceae (ii). 2 S. Afr. Cult. orn. fl.

Noaea Moq. in DC. Chenopodiaceae (B). 7 W. As.

Noccaea Moench (*Hutchinsia* p.p. EP.). Cruciferae (4). 2 Alps.

Node, the joint where a leaf springs from the stem.

Nodocarpaea A. Gray. Rubiaceae (ii. 10). 1 Cuba.

No-eye pea (W.I.), *Cajanus indicus* Spreng.

Noisettia H. B. et K. Violaceae. 1 Brazil, Peru, Guiana.

Nolana L. Nolanaceae. 20 Chili, Peru. Many are shore plants with fleshy l.

Nolanaceae (EP.; *Convolvulaceae* p.p. BH.). Dicots. (Sympet. Tubiflorae). 3 gen., 30 sp., W. coast of S. Am. Herbs or low shrubs with simple l., often covered with glandular hairs. The l. in the veg. region are alt., but in the infl. portion they become paired in the same way as in Solanaceae (q.v.). Many are sea-shore plants with fleshy l. Fls. sol. in the leaf-axils, ♂, reg. K (5); C (5); A 5, alt. with petals; G typically 5, only united in Alona, usu. free and divided by irreg. longitudinal constrictions into 5 or 10 portions standing in a row, or by longitudinal and transv. constrictions into 10—30 portions in 2 or 3 rows. The fr. consists of a corresponding number of 1—7-seeded nutlets. Stipe 1. Seed album. *Genera*: *Nolana*, *Alona*, *Dolia*.

Nolina Michx. Liliaceae (vi). 10 S.W. N. Am. Xero. Cult.

Nolletia Cass. Compositae (3). 4 Morocco, S. Afr.

Noltea Reichb. Rhamnaceae. 1 S. Afr. Cult. orn. shrub.

Nomaphila Blume (*Hygrophila* p.p. EP.). Acanth. (iv. A). 8 palaeotrop.

Nomenclature (with esp. reference to classification). The unit in classification is the *species*, which was described by A. L. de Jussieu as "the perennial succession of similar individuals perpetuated by generation." All marsh marigolds (*Caltha palustris*) form one sp., or all pl. of Indian corn (*Zea Mays*) or coconut (*Cocos nucifera*). But exactly to

define a sp. is impossible. Each man in practice arrives at his own conception somewhere between (or at) the extremes usu. called Linnean and Jordanian sp. *Draba* (*Erophila*) *verna* for example (Linnean) is distinguished from other D. by absence of petiole and oblong-elliptical pod, but Jordan, studying the sp. in great detail, split it into a great number of forms, to which he gave specific rank, when he found that each one continued to breed true. These were distinguished by "small" characters, such as differences in hairiness, fruit-shape, leaf-form, &c. Cf. Jordan, *Diagnoses d'espèces nouv. ou méconnues*, Paris, 1864, Rosen in *Bot. Zeit.* 1889, p. 565.

The most popular conception of sp., and the one used in this book, and in most floras and other botanical books, is the Linnean, or somewhere near to it, e.g. as used by Sir J. D. Hooker, or Dr A. Engler. The many forms into which a wide ranging sp. can be divided are classed, the larger and more important as *subspecies*, the smaller as *varieties*, *subvarieties*, and *forms*. Publication of a sp., by sale or public distribution of printed matter or indelible autographs, consists in the giving of a Latin description of the sp. sufficient to distinguish it from its congeners, and of a name (Latin or Latinised) by which it may be recognised. The name of the author is then appended (often in abbreviated form, cf. Abbreviations), and publication is complete. A sp. for example may be *viscosa* (sticky) Jones, or *gigas* (giant) Klein.

The next stage above sp. is *genus* or group of sp., with possible intermediates of *subgenus*, *section* and *subsection*; and again the difficulty crops up as to the comprehensiveness of the group. What one may consider as a subgenus, or even a section, another may regard as a genus. The great thing is to find a group of sp. clearly marked off by two or three distinct chars. from all other groups. Such a genus as the roses (*Rosa*), the buttercups (*Ranunculus*), the bananas (*Musa*), the pineapples (*Ananas*) or the figs (*Ficus*) is unmistakable, and is still defined as it was defined by Tournefort or Linnaeus. But in such a case as *Andropogon*, *Cereus*, *Eugenia*, *Loranthus*, *Myristica*, *Oenothera*, the genus is not so clearly marked off, and does not, throughout its members, retain a few well-marked chars. constantly, so that a large number of botanists prefer to split it into other smaller genera. Some of those mentioned are often recognised as composed of 5 to 20 genera.

Genera are grouped into *families* (e.g. Ranunculaceae), these into *orders* (e.g. Ranales), *classes* (e.g. Dicotyledoneae), and *divisions* (e.g. Siphonogama). But subdivision is usually necessary here, so that the list of possible headings ultimately runs:

Div., Subdiv., Class, Subclass, Order, Suborder, Fam., Subfam., Tribe, Subtribe, Gen., Subgen., Sect., Subsect., Sp., Subsp., Var., Subvar., Form.

To every plant is given a binomial appellation, the first half being the gen., the second the sp., e.g. *Ranunculus acris*. To complete the identification the name of the author of this name must be appended, in this case Linnaeus (L.), as there might be another plant with the same name given by someone else.

The essential points to aim at are fixity of names, and the avoidance of confusion, but in very many cases these are yet to be arrived at.

A group of any rank can bear only one valid name—the oldest. But to apply this rule rigidly would allow almost no fixity. For flowering plants and ferns it is therefore agreed to go back only to the first edition (1753) of Linnaeus' *Species Plantarum*, and the descriptions in his *Genera Plantarum*, edit. 5, 1754. Further, there are a large number of genera whose current names are not the oldest, but are so familiar that a change would cause confusion, so that it has been agreed, for instance, that *Welwitschia* shall retain that name and not be termed *Tumboa*, though the latter was first bestowed, and the same in a great number of other instances.

When a name given to a genus by a pre-Linnean author is taken over by Linnaeus or a subsequent author, it is thus indicated:

Mercurialis (Tourn.) L. (named by T., accepted by L.).

When a name was given, but not published, by a botanist, and subsequently published by another, it is shown thus:

Leersia Soland. ex Sw. (given by Solander, in ms., and published by Swartz).

When a name is published by a man writing in someone else's publication, it is indicated by 'in,' e.g. L. C. Rich. in Michx. means given by Richard in Michaux's *Flora*.

When a sp. is transferred from one gen. to another, it retains its specific name if possible (i.e. usu. if the new gen. does not already contain a sp. with the same name), and the author of the first may be indicated in brackets, e.g. *Cheiranthus tristis* L. may become *Matthiola tristis* (L.).

Genera and species that are merged in others become *synonyms*, of which there are vast numbers. This book contains very many generic synonyms, indicated thus:

Acrocarpidium Miq. = *Peperomia* Ruiz et Pav.

But a synonym may at any time be revived, so that it is not customary to use names from the list of synonyms to designate new gen. or sp.

When a genus is merged in another, the fact is often signified by the letters p.p. (*pro parte*), to indicate that it only forms a portion of the larger genus, often a subgenus or a section.

The symbol $\times$ is used to designate a *hybrid* (cross of two species) or *mule* (cross of two divisions of one sp.).

Generic and specific names as published are collected in the *Kew Index*, to which a supplement is published every 5 years. At first the names were divided into valid and synonyms, but now all are published without any editorial expression of opinion. In de Dalla Torre and Harms' *Genera Siphonogamarum* is a list of generic names and synonyms pretty much as accepted by Engler. In this book I have placed all genera as accepted by Linnaeus, Bentham-Hooker, or Engler-Prantl, and all subsequent genera, whether usu. considered synonyms or not.

For details see Briquet, *Règles Internationales de la nomenclature botanique*, Jena, 1912; Asa Gray, *Structural Botany*, ch. x.

Nomocharis Franch. Liliaceae (v). 1 Yunnan.

Non-articulate, not cut off by an absciss-layer.

Nonatelia Aubl. = *Palicourea* Aubl. (Rubi.).

- Nonnea** Medic. Boraginaceae (IV. 3). 30 Medit.
Nonsuch, *Medicago*; -e so pretty, *Saxifraga umbrosa* L.
Noogoora burr (Austr.), *Xanthium*.
Nopalea Salm-Dyck. Cactaceae (II). 3 C. Am. Similar to *Opuntia*.
 Upon *N. coccinellifera* Salm-Dyck the cochineal insect (*Coccus cacti*) is cult., chiefly in the Canaries, &c. It has no thorns.
Norantea Aubl. Marcgraviaceae. 16 trop. Am. All the fls. are fertile, and have saccate nectariferous bracts. Resembles *Philodendron* in habit.
Norfolk Island pine, *Araucaria excelsa* R. Br.
Normanbya F. Muell. = *Ptychosperma* Labill. (Palm.).
Normandia Hook. f. Rubiaceae (II. 7). 1 New Caled.
Noronhia Stadm. Oleaceae. 3 Madag., Timor.
Norrisia Gardn. Loganiaceae. 2 Malaya.
Northea Hook. f. Sapotaceae (2). 1 Seychelles.
Northern fern, *Blechnum boreale* Sw.; - glacial zone, zone of cold winters, of hot summers, cf. Zones of Vegetation.
Norway spruce, *Picea excelsa* Link.
Norysca Spach = *Hypericum* Tourn. p.p. (Guttif.).
Nosema Prain. Labiatae (inc. sed.). 3 S.E. As.
Notanthera G. Don = *Loranthus* L. p.p. (BH.) = *Phrygilanthus*.
Notaphoebe Blume ex Pax (*Alseodaphne* BH.). Lauraceae (I). 40 Indomal., Am.
Notelaea Vent. Oleaceae. 6 Austr., N.Z. Hard timber.
Nothites Cass. = *Stevia* Cav. (Comp.).
Nothocalais Greene (*Microseris* p.p. EP.). Compos. (I3). 2 N. and C. Am.
Nothocestrum A. Gray. Solanaceae (2). 4 Hawaiian Is.
Nothochilus Radlk. Scrophulariaceae (III. 2). 1 Brazil.
Nothochlaena R. Br. Polypodiaceae. 50 trop. and temp.
Nothofagus Blume (*Fagus* p.p. BH.). Fagaceae (I). 12 S. temp., exc. Afr. *N. Cunninghamii* Oerst. (myrtle tree), good timber.
Nothoholcus Nash (*Holcus* p.p.). Gramineae (9). 8 temp. |*.
Notholaena R. Br. = *Nothochlaena* R. Br. (Polypod.).
Notholcus Nash ex Hitchcock = *Nothoholcus* Nash (Gram.).
Nothopanax Miq., Seem. (*Panax* BH.). Araliaceae (I). 12 *.
Nothopegia Blume. Anacardiaceae (4). 3 Indomal.
Nothophlebia Standley. Rubiaceae (I. 7). 1 Costa Rica.
Nothoprotium Miq. Burseraceae. 1 Sumatra.
Nothosaerua Wight. Amarantaceae (2). 1 trop. Afr. and As.
Nothoscordum Kunth. Liliaceae (IV). 15 China, Am. Adv. embryos form by budding of nucellus round embryo-sac (cf. *Funkia*).
Nothosmyrnium Miq. Umbelliferae (III. 4). 1 Japan.
Nothospondias Engl. Anacardiaceae (2). 1 Cameroons.
Noticastrum DC. = *Aster* Tourn. p.p. (Comp.).
Notobuxus Oliv. Buxaceae. 1 Natal.
Notoceras R. Br. in Ait. Cruciferae (4). 2 Medit.
Notochaete Benth. Labiatae (VI). 1 Himalaya.
Notochloe Domin (*Triodia* p.p.). Gramineae (10). 1 New S. Wales.
Notodon Urb. Leguminosae (III. 6). 1 W.I.
Notonerium Benth. Apocynaceae (I. 2). 1 S. Austr.

- Notonia** DC. (*Senecio* p.p. *EP.*). Compositae (8). 12 palaeotrop.
- Notopora** Hook. f. Ericaceae (III. 2). 1 Brit. Guiana.
- Notoptera** Urb. Compositae (5). 2 Jamaica, Guatemala.
- Notopterygium** Boissieu. Umbelliferae (III. 2). 2 China.
- Notorhizal**, *Cruciferae*.
- Notosceptrum** Benth. Liliaceae (III). 8 S. and trop. Afr.
- Notospartium** Hook. f. Leguminosae (III. 6). 1 N.Z.
- Notothixos** Oliv. Loranthaceae (II). 6 Indomal.
- Notothlaspi** Hook. f. Cruciferae (I). 3 N.Z.
- Nototribe** (fl.), with essential organs striking a visitor's back.
- Nototriche** Turcz. (*Malvastrum* A. Gray). Malvaceae (2). 75 S. Am.
- Nototrichium** Hillebrand. Amarantaceae (2). 3 Hawaiian Is.
- Notylia** Lindl. Orchidaceae (II. 19). 24 trop. Am. Cult. orn. fl.
- Nouelia** Franch. Compositae (12). 1 S.W. China.
- Nouettea** Pierre. Apocynaceae (II. 1). 1 Cochinchina.
- Noyera** Tréc. (*Perebea* p.p.). Moraceae (II). 1 Guiana.
- Nucellus**, the mass of the ovular tissue.
- Nucularia** Battand. Chenopodiaceae (B). 1 S. Oran. . .
- Nuculiferae** (Warming). The 6th cohort of Sympetalae.
- Nudiflorae** (*BH.*). The 5th series of Monocotyledons.
- Nudiflorus** (Lat.), with naked fl.
- Nuphar** Sibth. et Sm. Nymphaeaceae (III). 7 N. temp. and cold.
- N. luteum* Sibth. et Sm. (yellow water-lily or brandy-bottle) in Brit.
- Veg. habit of Nymphaea (*q.v.*). The fl. projects a little above the water, and is fully hypog. At the base of the peduncle is a rudimentary bract. There are 5 large coloured outer P leaves, quincuncial, the fourth anterior; within are the 'petals,' 13 in number arranged in a 5/13 spiral. Then follow ∞ sta., the outer 13 alt. with the petals, the next 13 with them, and so on in a spiral. $\bar{G}$ (10—16), multiloc. Stigmas, ovules, &c., as in Nymphaea. Fr. a large berry; it breaks off from the stalk and splits up into separate cpls. The seeds have no aril like Nymphaea, but the slimy pericarp contains bubbles: the seeds are set free by its decay, and sink.
- Nut**, a dry indeh. fr., the product of > 1 cpl.; **Areca** -, *Areca*; **Australian chest**-, *Castanospermum australe* A. Cunn.; **Bambarra ground** -, *Voandzeia subterranea* Thou.; **betel** -, *Areca Catechu* L.; **bladder** -, *Staphylea*; **Brazil** -, *Bertholletia excelsa* Humb. et Bonpl.; **bread** -, *Brosimum*; **butter** -, *Caryocar nuciferum* L.; **candle** -, *Aleurites triloba* Forst.; **cashew** -, *Anacardium occidentale* L.; **chest**-, *Castanea vulgaris* Lam.; **cob**-, *Corylus*; **coco**-, *Cocos nucifera* L.; **cola**-, *Cola vera* K. Schum.; **coquilla** -, *Attalea funifera* Mart.; **earth** -, *Arachis hypogaea* L., *Conopodium denudatum* Koch; **-grass**, *Cyperus*; **ground** -, *Arachis hypogaea* L.; **hazel** -, *Corylus Avellana* L.; **hog** -, *Spondias*; **horn** -, *Trapa*; **horse-chest**-, *Aesculus Hippocastanum* L.; **ivory**-, *Phytelphas*; **kola** -, see cola; **marking** -, *Semecarpus*; **pea**-, *Arachis hypogaea* L.; **pistachio** -, *Pistachia vera* L.; **pecan**-, *Carya*; **physic**-, *Jatropha Curcas* L.; **-rush** (Am.), *Scleria*; **Sapucaia** -, *Lecythis*; **Souari** -, *Caryocar nuciferum* L.; **-tree** (Austr.), *Macadamia*.
- Nutans** (Lat.), nodding.
- Nutation**, lateral swaying of tip of a growing organ.

Nutlets, *Labiatae* (fr.).

Nutmeg, *Myristica fragrans* Houtt., *Monodora Myristica* Dun.; **Brazilian** -, *Cryptocarya*; **calabash** -, *Monodora Myristica* Dun.; - **grass** (Am.), *Cyperus rotundus* L.; **Peruvian** -, *Laurelia aromatica* Juss.

Nuttallia DC. = *Nemopanthes* Rafin. (Aquifol.).

Nuttallia Rafin. = *Mentzelia* Plum. p.p. (Loas.).

Nuttallia Torr. et Gray. Rosaceae (v). 1 N.W. Am. Like *Prunus*, but with 5 free cpls.

Nuxia Comm. ex Lam. Loganiaceae. 20 Afr., Madag.

Nuytsia R. Br. Loranaceae (1). 1 W. Austr., a small tree, doubtfully parasitic on roots. Cotyledons 3.

Nyctaginaceae (EP., BH.). Dicots. (Archichl. Centrospermae; Curvembryae BH.). 20 gen., 160 sp., mostly trop. and esp. Am. Trees, shrubs or herbs with opp. (often unequal) l. and no stips. Fls. in cymes, ♂ or unisexual, and with much variety. At the base of the fls. are usu. several bracts, often large and coloured. In *Bougainvillea* 3 large conspicuous bracts enclose a group of 3 fls. In *Abronia* the number of bracts and fls. is larger, while in *Mirabilis* there is only one fl. and the involucre resembles a calyx. P usu. (5), petaloid, persistent upon the ripe fr.; usu. the upper part drops away and the fr. remains in the lower part, which is termed the *anthocarp*, and may become glandular, or form an umbrella-like wing, or otherwise serve for seed-dispersal. A typically 5, alt. with the P, but often 3, 8, 10 or other numbers, or raised to 20 or 30 by branching; filaments often of unequal length; G 1, with long style and 1 basal erect anacampylotr. ov. Achene enclosed in the P. The N. are of slight economic value; see *Mirabilis*, *Neea*, &c. *Chief genera*: *Mirabilis*, *Bougainvillea*, *Pisonia*, *Neea*, *Reichenbachia*.

Nyctagineae (BH.) = Nyctaginaceae.

Nyctaginia Choisy. Nyctaginaceae. 1 Texas, Mexico.

Nyctago Juss. = *Mirabilis* L. p.p. (Nyct.).

Nyctanthes L. Oleaceae. 1 Indomal.

Nycterinia D. Don = *Zaluzianskya* F. W. Schmidt (Scroph.).

Nyctarium Vent. = *Solanum* Tourn. p.p. (Sol.).

Nycticalos Teijsm. et Binnend. Bignoniaceae (1). 2 Malaya.

Nyctocereus Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 3 Mexico, Nicaragua.

Nyctophylla Zipp. Inc. sed. 1 Timor.

Nymanina K. Schum. Euphorbiaceae (A. I. 1). 1 New Guinea.

Nymanina S. O. Lindb. Meliaceae (III). 1 S. Afr.

Nymphaea (Tourn.) L. (*Castalia* Salisb.). Nymphaeaceae (III). 40 trop. and temp. *N. alba* L. (white water-lily) in Brit. Many cult., e.g. *N. Lotus* L. sometimes supposed to be the sacred lotus of Egypt (see *Nelumbium*). They grow in shallow water. There is a stout creeping rhiz.; at the tip it is bent up, and bears stip. l. and fls. on long stalks. The peduncle occupies the position of one of the l. of the spiral, and there is no bract at its base. The l. is large and floats on the surface; it is nearly circular, entire, and leathery, with stomata, cuticle and palisade tissue on the upper side.

Fl. ♀, reg., acyclic; floats on the surface. The 4 outermost floral l. exhibit a peculiar aestivation, the ant. being entirely outside, the post.

inside the lat. l. According to Caspary (Eichler, *Blüthendiag.* II. 184) the ant. l. repres. the bract ('adnate' to the peduncle; cf. Solanaceae), the two lat. l. the bracteoles, the post. a true sepal. Most authors regard the 4 l. as a K. C well developed; 4 outer petals alt. with the sepals, and 4 inner alt. with the outer. These 8 form the starting points of as many spirals of petals, usu. 4 in each, alt. approximately with the outer 8 and with one another. As we pass inwards the petals become narrower and show transition forms to the sta., which to the number of 50 or 100 continue the fl. inwards. Whilst the K is hypog. the petals and sta. are inserted up the sides of the G, which has 10—20 loculi, each containing ∞ ov. scattered over the whole carpellary surface (cf. Butomus). The sessile stigmas form a number of rays upon the upper surface of the G, as in a poppy. The fr. is a large berry containing ∞ seeds, each covered by a spongy aril. Between aril and seed are air-bubbles. The fr. ripens under water and when it dehisces the mass of seeds floats up; then the individual seeds part company, each drifting about until the air escapes (by decay of the aril or otherwise), when it sinks to the bottom of the pond. There is a large perisperm round the endosp. proper. [Conard, *The Waterlilies*, Washington, 1905.]

Nymphaeaceae (EP., BH.). Dicots. (Archichl. Ranales). 8 gen., 60 sp., cosmop. Water or marsh pl. usu. with rhiz., and with submerged, floating, and aerial l. and sol. usu. large fls. of great variety of pattern. Cabomba is most simple and agrees in type with the other Ranales; whilst in Nuphar, Nymphaea, Victoria, Nelumbium, &c., great modification appears, esp. in the G. In Nelumbium the ovary is still apocp., though the cpls. are connected by the curious torus, whilst in the other gen. it is syncp.; in Nuphar it is sup., in Nymphaea semi-inf., in Victoria inf. The P too shows much variety, from the simple Cabomba-type to Nuphar, &c. Ovules usu. anatropous. The seed has both endosperm and perisperm (exc. Nelumbium), and is often arillate. For full details of the floral structure see chief gen., and Eichler's *Blüthendiagramme*.

Classification and genera (after Caspary);

- I. *NELOMBONOIDEAE* (seed exalbuminous; cpls. free in obconical receptacle): Nelumbium (only genus).
- II. *CABOMBOIDEAE* (endosperm and perisperm; cpls. free): Cabomba, Brasenia.
- III. *NYMPHAEOIDEAE* (do., but cpls. united); Victoria, Euryale, Nymphaea, Nuphar, Barclaya.

Nyrophylla Neck. Lauraceae. Nomen.

Nyssa Gronov. ex L. Nyssaceae. 6 N. Am., Himal., Malaya. *N. sylvatica* Marsh and others in N. Am. (tupelo, pepperidge, gum-tree) yield timber and ed. fr.

Nyssaceae (EP.; *Cornaceae* p.p. BH.). Dicots. (Archichl. Myrtiflorae). 3 gen., 10 sp., E. As., E. N. Am. Shrubs with alt. exstip. l. and small $\frac{\sigma}{\gamma}$ or unisexual fls. in heads, racemes, umbels, or sol., with flat or hollow recept. K 5 or more, C 5 or 0, A twice as many or less, G usu. 1-loc., sometimes 6—10-loc. with one ov. in each. Usu. drupe. Endosp.

Nyssanthos R. Br. Amarantaceae (2). 2 Austr.

Nyssopsis O. Ktze. = *Camptotheca* Decne. (Corn.).

Oak, *Quercus*; **American turkey-**, *Quercus obtusiloba*; **Ceylon-**, *Schleichera trijuga* Willd.; **cork-**, *Quercus Suber* L.; **Dominica-**, *Ilex sideroxyloides* Griseb.; **-fern**, *Dryopteris Linneana* C. Chr.; **forest-**, *Casuarina*; **dyer's-**, *Quercus tinctoria* Bartr.; **live-**, *Quercus virginiana* Mill. and other evergr. sp.; **patana-** (Ceylon), *Careya arborea* Roxb.; **holly-**, *Quercus Ilex* L.; **Quebec-**, *Quercus alba* L.; **she-**, *Casuarina*; **silky-**, *Grevillea*; **Turkey-**, *Quercus Cerris* L.; **white-**, *Quercus alba* L.

Oakesia S. Wats. (*Uvularia* EP.). Liliaceae (I). 2 N. Am.

Oakesiella Small (*Uvularia* p.p.). Liliaceae (I). 3 N. Am.

Oat, *Avena sativa* L.; **-grass**, *Avena fatua* L., &c.; **side-**, *Bouteloua*.

Oaxacania Robinson et Greenman. Compositae (2). 1 Mexico.

Ob- (Lat. pref.), inverted; **-diplostemonous** (sta.), in two whorls, the outer opp. to the petals, *Burseraceae*, *Caryophyllaceae*, *Crassulaceae*, *Oxalidaceae*, *Saxifragaceae*, *Zygophyllaceae*; **-lanceolate**, **-lique**, **-long**, **-ovate**, &c., see Leaf; **-solete**, aborted.

Obbea Hook. f. Rubiaceae (II. 2). 1 Hawaiian Is.

Obeliscaria Cass. = *Lepachys* Rafin. (BH.) = *Rudbeckia* L. p.p.

Oberonia Lindl. Orchidaceae (II. 4). 80 palaeotrop.

Obetia Gaudich. Urticaceae (I). 2 Madagascar, Bourbon.

Obione Gaertn. = *Atriplex* L. p.p. (Chenop.).

Obolaria L. Gentianaceae (I). 1 N. Am. Saprophyte (cf. *Bartonia*) of a purplish green colour with scaly l.

Occidentalis (Lat.), western.

Oceanium (Cl.), an ocean formation.

Oceanorus Small (*Amianthium* A. Gray). Liliaceae (I). 1 N. Am.

Ochagavia Phil. Bromeliaceae (4). 1 Juan Fernandez.

Ochanostachys Mast. Olacaceae. 1 Malay Peninsula, Borneo.

Ochlandra Thw. Gramineae (13). 6 India, Ceylon.

Ochna L. Ochnaceae. 45 trop. As., Afr., Cape Col. K coloured. Cpls. 3—15, free below, but with a common style. After fert. the style falls and each cpl. gives a drupe, while the recept. becomes fleshy under them. The l. shows veining well.

Ochnaceae (EP.; BH. place *Sauvagesia*, &c. in Violaceae). Dicots. (Archichl. Parietales; Geranialer BH.). 17 gen., 210 sp., trop. Most are trees or shrubs with alt. usu. simple stip. l. and panicles, racemes or cymes (*Sauvagesia*, &c.) of ♂, usu. reg. fls. K 5, free or united at base, imbr.; C 5, rarely 10, contorted; A 5, 10, or ∞, hypog. or on an elongated axis; G (2—5), rarely (10—15), often free below with common style (cf. *Apocynaceae*). Ovules 1—2—∞ in each cpl., erect or rarely pend., always with ventral raphe. The axis swells and becomes fleshy under the fr., which is usually a cluster of drupes, but sometimes a berry or capsule. Endosp. or not. *Chief genera*: *Ochna*, *Gomphia*, *Sauvagesia*.

Ochocoa Pierre (*Scyphocephalum* EP.). Myristicaceae. 1 trop. Afr.

Ochra, *Hibiscus esculentus* L.

Ochradenus Delile. Resedaceae. 5 S. Medit.

Ochrea, **ocrea**, sheathing stipule, *Polygonaceae*.

Ochrocarpus Thou. Guttiferae (IV). 10 palaeotrop.

- Ochroma** Sw. Bombacaceae. 1 trop. S. Am., W.I., *O. Lagopus* Sw. (balsa, corkwood). Wood very light. Seeds embedded in hairs.
- Ochronerium** Baill. Apocynaceae (II. 1). 1 Madagascar.
- Ochropteris** J. Sm. Polypodiaceae. 1 Madagascar, Mascarene Is.
- Ochrosia** Juss. Apocynaceae (I. 3). 15 palaeotrop.
- Ochthocharis** Blume. Melastomaceae (I). 5 Malaya.
- Ochthocosmus** Benth. (*Phyllocosmus* Klotzsch). Lin. 3 trop. Am., Afr.
- Ochthodium** DC. Cruciferae (2). 1 W. As.
- Ocimum** L. Labiatae (VII). 60 sp. trop. and warm temp. *O. Basilicum* L. is the basil, sacred in the Hindu religion (tulsi).
- Oclemena** Greene (*Aster* L. p.p.). Compositae (3). 2 N. Am.
- Ocotea** Aubl. Lauraceae (I). 230 trop. and subtrop. *O. bullata* E. Mey. (S. Afr.) yields a useful timber (stinkwood).
- Ocotilla**, *Fouquieria splendens* Engelm.
- Ocrearia** Small (*Saxifraga* p.p.). Saxifragaceae (I). 1 W. N. Am.
- Octadesmia** Benth. Orchidaceae (II. 6). 3 Jamaica, S. Domingo.
- Octarrhena** Thw. = *Phreatia* Lindl. (Orchid.).
- Octas** Jack. Inc. sed. 1 Malaya.
- Octella** Rafin. = *Melastoma* L., &c., p.p. (Melast.).
- Octoceras** Bunge. Cruciferae (4). 1 W. As.
- Octodon** Thonn. (*Borreria* p.p. *EP.*). Rubiaceae (II. 10). 2 trop. Afr.
- Octoknema** Pierre. Olacaceae. 4 trop. Afr.
- Octolepis** Oliv. Thymelaeaceae, once Flacourtiaceae. 4 W. Afr.
- Octolobus** Welw. Sterculiaceae. 1 Angola.
- Octomelis** Miq. Datisceae. 2 Malay Archipelago.
- Octomeria** R. Br. Orchidaceae (II. 8). 15 Brazil to W.I.
- Octopleura** Griseb. (*Ossaea* p.p. *EP.*). Melastom. (I). 5 trop. Am., W.I.
- Octothea** R. Viguier. Araliaceae (I). 1 New Caledonia.
- Octotropis** Bedd. Rubiaceae (II. 1). 1 Travancore.
- Odacmis** Rafin. Inc. sed. 1 N. Am.
- Odina** Roxb. (*Calesium* Adans.). Anacardiaceae (2). 15 trop. Afr., As.
- Odonia** Bertol. (*Galactia* P. Br.). Leguminosae (III. 10). 8 trop. Am.
- Odont-**, **odonto-** (Gr. pref.), tooth.
- Odontadenia** Benth. Apocynaceae (II. 1). 20 trop. S. Am.
- Odontandra** Willd. ex Roem. et Schult. (*Trichilia* p.p. *BH.*). Meliaceae (III). 4 trop. S. Am.
- Odontanthera** Wight. Asclepiadaceae (inc. sed.). Nomen.
- Odontarrhena** C. A. Mey. = *Alyssum* Tourn. p.p. (Crucif.).
- Odontelytrum** Hack. Gramineae (5). 1 trop. Afr.
- Odontioda** × Rolfe. Orchidaceae. Hybrid, *Odontoglossum*-*Cochlioda*.
- Odontites** (Riv.) Hall (*Bartsia* *BH.*). Scrophulariaceae (III. 3). 20 Medit., S. Eur., W. As. Semiparasites (see fam.).
- Odontocarya** Miers. Menispermaceae. 4 trop. S. Am., W.I.
- Odontochilus** Blume. Orchidaceae (II. 2). 10 Indomal, Polynesia.
- Odontocidium** ×. Orchidaceae. Hybrid, *Odontoglossum*-*Oncidium*.
- Odontocyclus** Turcz. Cruciferae (inc. sed.). 1 Kurile Is.
- Odontoglossum** H. B. et K. Orchidaceae (II. 19). 100 Mts. of trop. Am. Epiphytes. Many cult. orn. fl. Many hybrids.
- Odontonema** Nees (*Thyrsacanthus* *BH.*). Acanthaceae (IV. B). 25 trop. Am.

Odontonemella Lindau (*Eranthemum* p.p.). Acanth. (IV. B). 2 Indo-mal.

Odontonia × Rolfe. Orchidaceae. Hybrid, *Odontoglossum*-*Miltonia*.

Odontonychia Small (*Siphonychia* p.p.). Caryoph. (I. 4). 2 N. Am.

Odontosoria (Presl) Fée. Polypodiaceae. 20 trop. and subtrop., exc. Afr.

Odontospermum Neck. (incl. *Asteriscus* Moench). Compositae (4). 12 Medit. *O. (A.) pygmaeum* O. Hoffm. is a xero. whose fr.-heads close in dry weather (cf. *Anastatica*, *Mesembryanthemum*); the seeds only escape in damp weather suitable for germination.

Odontostelma Rendle (*Schizoglossum* EP.). Asclep. (II. 1). 1 Angola.

Odontostomum Torr. Liliaceae (III) (*Haemodor. BH.*). 1 California.

Odontotecoma Bur. et K. Schum. (*Tecoma* p.p.). Bignoniaceae (2). 1 Brazil.

Odontychium K. Schum. (*Hedyckium* p.p.). Zingiber (1). 1 Mal. Pen.

Odostemon Rafin. (*Berberis* p.p.). Berberidaceae. 7 N. Am.

Odyendea Engl. (*Quassia* p.p.). Simarubaceae. 2 trop. W. Afr.

Oeceoclades Lindl. = *Saccolabium* Blume (Orchid.).

Oecology, ecology.

Oecopetalum Greenman et C. H. Thompson. Icacinaceae. 1 Mexico.

Oedematopus Planch. et Triana (*Havetiopsis* BH.). Guttiferae (v). 3 Amazon valley.

Oedera L. Compositae (7). Cape Colony.

Oegroe Phil. Compositae (inc. sed.). 1 Chili.

Oenanthe (Tourn.) L. Umbelliferae (III. 5). 35 N. temp. |*. 7 in Brit. (water drop-wort).

Oenocarpus Mart. Palmaceae (IV. 1). 8 N. S. Am.

Oenone Tul. (*Ligea* Tul.). Podostemaceae. 8 Guiana, Brazil.

Oenosciadium Pomel (*Oenanthe* p.p. EP.). Umbellif. (III. 5). 1 N. Afr.

Oenothera L. (BH. incl. *Godetia* Spach, *Onagra* Tourn., *Xylopleurum* Spach). Onagraceae (2). 30 Am. *O. (Onagra) biennis* L. (evening primrose), &c., cult. orn. fl. The fls. of *O. biennis* emit scent at evening and are visited by nocturnal moths, to which they are suited by the long tubes.

Oenotheraceae (Warming) = Onagraceae.

Oenotheridium Reiche (*Godetia* p.p.). Onagraceae (2). 1 Chili.

Oeonia (*Aeonia*) Lindl. Orchidaceae (II. 20). 5 Mascarene Is.

Oeoniella Schlechter (*Epidendrum* p.p.). Orchid. (II. 6). 2 Madag., Masc.

Ofaiston Rafin. Chenopodiaceae (B). 1 W. As.

Officinalis (Lat.), medicinal.

Offset, a short runner, bending up at the end, *Agave*, *Sempervivum*.

Oftia Adans. Myoporaceae. 2 S. Afr.

Ogeechee lime (Am.), *Nyssa*.

Oianthus Benth. Asclepiadaceae (II. 3). 3 India.

-oides (Gr. suff.), -like.

Oil occurs in plants in two forms, the *fixed oils*, or non-nitrogenous reserves in seeds, and the *volatile oils*, which give the perfume to many fls. and l. The former are obtained by pressure, the latter by distillation. Fixed oils from *Aleurites*, *Arachis* (groundnut), *Argania*,

Barringtonia, *Brassica* (rape, colza), *Calophyllum*, *Carya*, *Cocos* (coconut), *Corylus*, *Croton*, *Elaeis* (palm oil), *Eruca*, *Fagus*, *Ginkgo*, *Glycine* (soja, soy), *Gossypium* (cottonseed), *Guizotia* (nigerseed), *Helianthus*, *Juglans* (walnut), *Linum* (linseed), *Melia*, *Moringa*, *Olea* (olive), *Papaver*, *Polygala*, *Ricinus* (castor), *Sapium*, *Schleichera*, *Sesamum* (gingelly), *Theobroma* (cacao-butter), *Tilia*, *Vateria*, &c., &c. Some of these are drying oils, like linseed, and used in painting, some remain fluid, some are solid or fatty, esp. in Europe. More solid fatty bodies are obtained from *Bassia*, *Butyrospermum*, *Caryocar*, *Pentadesma*, &c. Volatile oils from *Acacia*, *Backhousia*, *Calamintha*, *Cananga*, *Cinnamomum* (cinnamon), *Citrus* (lemon, &c.), *Cymbopogon* (citronella, geranium, lemongrass), *Dictamnus*, *Eucalyptus*, *Eugenia* (clove), *Gaultheria* (wintergreen), *Jasminum*, *Labiatae*, *Lavandula* (lavender), *Lippia*, *Melaleuca*, *Mentha* (peppermint), *Nardostachys* (spikenard), *Origanum*, *Pelargonium*, *Pogostemon* (patchouli), *Reseda*, *Rosa*, *Rosemarinus*, *Santalum* (sandalwood), *Sassafras*, *Thymus*, *Viola*, &c., &c.

Andiroba -, *Carapa*; **argan** -, *Argania*; **bay** -, *Laurus*; **ben** -, *Moringa*; **bergamot** -, *Citrus*; **birch** -, *Betula*; **cajeput** -, *Melaleuca*; **camphor** -, *Cinnamomum*; **caraway** -, *Carum*; **castor** -, *Ricinus*; **chaulmoogra** -, *Gynocardia*; **citron** -, *Citrus*; **citronella** -, *Cymbopogon*; **clove** -, *Eugenia*; **coconut** -, *Cocos*; **cohune** -, *Attalea*; **colza** -, *Brassica*; **cottonseed** -, *Gossypium*; **croton** -, *Croton*; **cumin** -, *Cuminum*; **Florence** (fine olive) -, *Olea*; **geranium** -, *Pelargonium*, *Cymbopogon*; **gingelly** -, *Sesamum*; **groundnut** -, *Arachis*; **hempseed** -, *Linum*; **illupi** -, *Bassia*; **jasmine** -, *Jasminum*; **juniper** -, *Juniperus*; **kekuna** -, *Aleurites*; **khus-khus** -, *Vetiveria*; **lavender** -, *Lavandula*; **lemon** -, *Citrus*; **lemongrass** -, *Cymbopogon*; **linseed** -, *Linum*; **Macassar** -, *Cananga*; **margosa** -, *Azadirachta*; **marjoram** -, *Origanum*; **mustard** -, *Brassica*; **neroli** -, *Citrus*; **nim** -, *Azadirachta*; **olive** -, *Olea*; **palm** -, *Elaeis*; **patchouli** -, *Pogostemon*; **peanut** -, *Arachis*; **pimento** -, *Pimenta*; **poppy** -, *Papaver*; **rantil** -, *Guizotia*; **rape** -, *Brassica*; **rosemary** -, *Rosemarinus*; **rue** -, *Ruta*; **rusa** -, *Cymbopogon*; **sandalwood** -, *Santalum*; **sanderswood** -, *Santalum*; **sassafras** -, *Sassafras*; **savin** -, *Juniperus*; **sunflower** -, *Helianthus*; **thyme** -, *Thymus*; **tonquin** -, *Dipteryx*; **turpentine** -, *Pinus*, &c.; **verbena** -, *Lippia*; **walnut** -, *Juglans*; **wintergreen** -, *Gaultheria*; **wood** -, *Dipterocarpus*, *Aleurites*; - glands or passages, *Guttiferae*, *Lauraceae*, *Monimiaceae*, *Myrtaceae*.

Oilapetalum Pohl. Inc. sed. Nomen.

Oionychion Nieuwland (*Viola* p.p.). *Violaceae*. 1 N. Am.

Oiospermum Less. *Compositae* (1). 1 Bahia.

Oistonema Schlechter. *Asclepiadaceae* (II. 3). 1 Borneo.

Okenia Schlecht. et Cham. *Nyctaginaceae*. 1 S. Mexico.

Okra, *Hibiscus esculentus* L.

Ola (Ceylon), *Borassus*, *Corypha*, &c.

Olacaceae (EP.; *Olacineae* p.p. BH.). *Dicots.* (Archichl. *Santalales*).

25 gen., 120 sp., trop. Most are shrubs or trees with alt. entire l. and small ♂ reg. fls. There is a distinct K, resembling the calyculus of *Loranthaceae*, but probably not equivalent to it. C 4—6; A as

many or 2 or 3 times as many; G partly sunk in the disc, or free, 2—5-loc. at base, 1-loc. above, with free plac. and 1 ovule hanging down into each loc. (occasionally 1-loc. 1-ovuled). Drupe or nut, one-seeded. Seed with testa and endosp. *Chief genera*: *Ximenia*, *Olax*.

Olacales (BH.). The 8th order of Polypetalae.

Olacineae (BH., *Olacaceae* + *Icacinaceae* EP.). Trees and shrubs with usu. alt. l. and axillary infl. of ♂ or unisexual reg. fls. K, C (4—5—6), A 4—10, rarely 12, G free or partly in disc, (3—5), 1- or multi-loc. with few ovules. Drupe 1-seeded. Endosp.

Olax L. *Olacaceae*. 35 palaeotrop.

Oldenburgia Less. *Compositae* (12). 3 Cape Colony.

Oldenlandia L. (incl. *Hedyotis* L.). *Rubiaceae* (1. 2). 180 trop. Some are heterostyled (dimorphic).

Oldfieldia Hook. *Euphorbiaceae* (A. 1. 1). 1 trop. W. Afr., *O. africana* Benth. et Hook. f., the African oak. Good timber.

Old maid (W.I.), *Vinca rosea* L.; - **man**, *Artemisia Abrotanum* L.; - - **'s beard**, *Tillandsia*; - - **cactus**, *Cereus senilis* Salm-Dyck; - **woman's bitter** (W.I.), *Picramnia*; - **witch grass** (Am.), *Panicum capillare* L.

Olea (Tourn.) L. *Oleaceae*. 35 *Medit.*, S. Afr., E. Ind., Austr., Polynes. *O. europaea* L. (olive), cult. in *Medit.* region from early ages. The wild form has thorny twigs and a small fr., the cult. form (var. *sativa* DC.) is smooth and has a large drupe with oily flesh. The oil is obtained by bruising and pressing the fruit. Several yield good timber, e.g. the olive, *O. laurifolia* Lem. (S. Afr.; black ironwood), &c.

Oleaceae (EP., BH.). *Dicots.* (Sympet. Contortae; *Gentianales* BH.). 21 gen., 400 sp., trop. and warm temp., esp. E. Ind. Shrubs and trees usu. with opp. l., which are exstip., simple or pinnate, often entire. Serial accessory buds occur in the leaf-axils of many sp. (e.g. *Syringa*) in both flg. and veg. parts. The infl. is racemose or cymose, often bracteolate. Fls. ♂, rarely unisexual, reg., 2—6-merous, sometimes poly- or a-petalous (*Fraxinus*, &c.). K typically (4), valvate; C (4) valvate or imbr., rarely conv.; A 2, epipet. usu. transv. placed, and alt. with cpls.; no disc; G (2); stigma 2-lobed on simple style; ov. 2-loc. with 2 anatrop. ov. in each loc. Berry, drupe, or caps., or schizocarp, with 1—4 seeds. Endosp. or none, embryo straight. *Olea*, *Fraxinus*, &c., are of economic value.

Oleander, *Nerium Oleander* L.

Oleandra Cav. *Polypodiaceae*. 10 trop.

Olearia Moench. *Compositae* (3). 90 Austr., N.Z., New Guinea. Replaces *Aster*, and closely resembles it, but all trees or shrubs.

Oleaster, *Elaeagnus*, *Olea*.

Oleiferus (Lat.), oil-bearing.

Oleine, *Cocos*.

Oleoxyton Roxb. *Dipterocarpaceae*. 1 Burma.

Oleraceus (Lat.), esculent.

Olibanum, *Boswellia Carteri* Birdw., &c.

Oligandra Less. *Compositae* (4). 3 trop. S. Am.

Oliganthes Cass. *Compositae* (1). 8 trop. Am.

Oligarrhena R. Br. *Epacridaceae* (3). 1 W. Austr.

- Oligo-** (Gr. pref.), few; **-merous**, with fewer members in whorl.
- Oligobotrya** Baker. Liliaceae (VII). 1 China.
- Oligocarpus** Less. Compositae (9). 3 S. Afr.
- Oligocladus** Chodat et Wilczek. Umbelliferae (III. 6). 1 Argentina.
- Oligodora** DC. (*Athanasia* p.p. *EP.*). Compositae (4). 1 S. Afr.
- Oligegynium** Engl. (*Nephtytis* p.p. *BH.*). Araceae (IV). 1 W. Afr.
- Oligolobos** Gagnep. Hydrocharidaceae. 2 China, Indochina.
- Oligomeris** Cambess. Resedaceae. 5 Africa, India, S.W. U.S.
- Oligonema** S. Wats. Compositae (3). 1 Mexico.
- Oligoneuron** Small (*Solidago* p.p.). Compositae (3). 4 N. Am.
- Oligosporus** Cass. = *Artemisia* L. p.p. (Comp.).
- Oligostemon** Benth. (*Duparquetia* *EP.*). Leguminosae (II. 5). 1 W. Afr.
- Oligothrix** DC. Compositae (8). 2 trop. and S. Afr.
- Olinia** Thunb. Oliniaceae. 6 Afr. Shrubs with opp. entire l. and panicles of ♂ fls. K, C, A 4—5, $\overline{G}$ (3—5), 3—5-loc. each with 2—3 ovules; short style. Drupe; no endosp.
- Oliniaceae** (*EP.*; *Lythraceae* p.p. *BH.*). Dicots. (Archichl. Thymelaeales). Only genus *Olinia* (*q.v.*).
- Olisbea** DC. (*Mouriria* *BH.*). Melastomaceae (III). 4 Brazil, W.I.
- Olivaea** Sch.-Bip. Compositae (6). 1 Mexico.
- Olive**, *Olea europaea* L.
- Oliveranthus** (*Oliverella*) Rose. Crassulaceae. 1 Mexico.
- Oliveria** Vent. Umbelliferae (III. 5). 1 W. As.
- Oliveriana** Reichb. f. (*Trichopilia* *BH.*). Orchid. (II. 19). 1 Colombia.
- Olmedia** Ruiz et Pav. Moraceae (II). 5 trop. S. Am.
- Olmediella** Baill. Flacourt. (4), formerly Morac. 2 Brazil?
- Olmediophaena** Karst. Moraceae (II). 1 Colombia.
- Olneya** A. Gray. Leguminosae (III. 6). 1 California to Mexico.
- Olostyla** DC. Rubiaceae (II. 9). 1 New Caledonia.
- Olympusa** Klotzsch. Asclepiadaceae (inc. sed.). 1 Guiana. Nomen.
- Olyra** L. Gramineae (5). 20 trop. Am., Afr.
- Omania** Sp. Moore. Scrophulariaceae (III. 3). 1 Arabia.
- Ombrophile**, a pl. which can, **-phobe**, which cannot, stand long continued rain.
- Ombrophytum** Poepp. Balanophoraceae. 2 Peru.
- Omphacomeria** A. DC. Santalaceae. 2 Austr.
- Omphalea** L. Euphorbiaceae (A. II. 7). 10 trop. Am., As., Madag.
- Omphalobium** Gaertn. = *Connarus* L. (Connar.).
- Omphalocarpum** Beauv. Sapotaceae (I). 5 trop. W. Afr.
- Omphalodes** Tourn. ex Moench. Boraginaceae (IV. 1). 24 Eur., As., Mexico. The borders of the achenes are inrolled.
- Omphalogonus** Baill. Asclepiadaceae (I). 1 Zanzibar.
- Omphalogramma** Franch. (*Primula* p.p.). Primul. 4 Himal., China.
- Omphalopappus** O. Hoffm. Compositae (5). 1 Angola.
- Omphalophthalmum** Karst. Asclepiadaceae (II. 4). 1 Colombia.
- Omphalopus** Naud. Melastomaceae (I). 2 Java, Sumatra.
- Omphalothrix** Maxim. Scrophulariaceae (III. 3). 1 N.E. As.
- Onagra** (Tourn.) Adans. (*Oenothera* L. p.p. *BH.*). Onagraceae (2). 8 N. Am., incl. *O. biennis* Scop., the evening primrose.

Onagraceae. Dicotys (Archichl. Myrtiflorae). 36 gen., 480 sp., chiefly N. temp. (see *Epilobium*). Most are perennial herbs, a few shrubs or trees. L. alt., opp., or whorled, simple, rarely stip. Fls. sol. in the leaf-axils or in spikes, racemes or panicles, ♂, reg. or ♂, usu. 4-merous (sometimes 2—5). Axis prolonged beyond ovary into a tube ('calyx-tube'). K 4, valv.; C 4, rarely 0, usu. conv.; A 4 + 4, or 4, 2, or 1; $\bar{G}$ (4), 4-loc. with axile plac. and $1-\infty$ anatrop. ov.; the septa are commonly imperfect below; style simple. The fls. are mostly adapted to bees or Lepidoptera and are often markedly protandr.; those of sp. of *Lopezia* are explosive. Fr. usu. a loculic. caps., sometimes a nut or berry. Seeds exalbum. Many cult. orn. fl.

Classification and chief genera (after Engler):

1. *Trapeae* (ov. semi-inf., 2-loc.; fr. thorny): *Trapa*.
2. *Oenotherae* (ov. inf., 4—1-loc.): *Epilobium*, *Jussiaea*, *Oenothera*, *Clarkia*, *Fuchsia*, *Lopezia*.

Oncidioda ×. Orchidaceae. Hybrid, *Oncidium-Cochlioda*.

Oncidium Sw. Orchidaceae (II. 19). 300 trop. Am., W.I. Some, e.g. *O. Papilio* Lindl., have flat tubers which make humus-collecting niches; others have fleshy l. and no tubers. Cult. orn. fl.

Oncinocalyx F. Muell. Verbenaceae (I). 1 Austr.

Oncinotis Benth. Apocynaceae (II. 1). 10 trop. Afr., Madag.

Oncoba Forsk. Flacourtiaceae (2). 30 trop. Am., Afr., Madag.

Oncocalamus Mann et H. Wendl. Palmae (III). 1 W. Afr.

Oncocarpus A. Gray. Anacardiaceae (4). 2 New Guinea, Fiji.

Oncodostigma Diels. Anonaceae (2). 1 New Guinea.

Oncosperma Blume. Palmae (IV. 1). 6 Indomal.

Oncostemma K. Schum. Asclepiadaceae (II. 3). 1 S. Thome.

Oncostemon A. Juss. Myrsinaceae (II). 60 Madag., Mascarenes.

Oncostylis Nees = *Fimbristylis* Vahl (BH.) = *Psilocarya* Torr.

Oncotheca Baill. Aquifoliaceae? Ebenaceae? 1 New Caled.

Oncus Lour. Dioscoreaceae. 1 Cochinchina.

Ondetia Benth. Compositae (4). 1 S.W. Afr.

Ongoeka Pierre. Olacaceae. 1 Gaboon.

Onion, *Allium Cepa* L.

Onobroma Gaertn. = *Carduncellus* Adans. (Comp.).

Onobrychis L. Leguminosae (III. 7). 80 temp. Eur., As. Floral mech. as in *Trifolium*. *O. sativa* Lam. (sainfoin) good fodder.

Onoclea L. Polypodiaceae. 1 N. Am., N. As.

Ononis L. Leguminosae (III. 4). 70 Medit., Eur. (3 in Brit.; rest-harrow). Shrubs and herbs, sometimes with thorny lat. branches. Mech. of fls. intermediate between *Lotus* and *Trifolium*. At first the upper edges of the keel cohere, and the pollen is squeezed out at the tip as in *Lotus*; afterwards the keel splits and the anthers emerge as in *Trifolium*. Cleist. fls. in some.

Onopix Rafin. Compositae (inc. sed.). 2 Louisiana.

Onopordon L. Compositae (II). 20 Eur., N. Afr., W. As. *O. Acanthium* L. (cotton thistle) in Brit. L. decurrent.

Onoseris DC. Compositae (12). 18 S. Am., Mexico.

Onosma L. Boraginaceae (IV. 4). 75 Medit., Himal.

Onosmodium Michx. Boraginaceae (IV. 4). 6 N. Am.

Ontogeny, development of the individual.

- Onuris** Phil. Cruciferae (4). 1 Chili.
- Onychium** Kaulf. Polypodiaceae. 6 trop. and subtrop.
- Onychosepalum** Steud. Restionaceae. 1 S.W. Austr.
- Oocarpon** Micheli. Onagraceae (2). 1 Brazil, Guiana, Cuba.
- Ooclinium** DC. = *Eupatorium* Tourn. p.p. (Comp.).
- Oonopsis** Greene (*Aplopappus* p.p.). Compositae (3). 6 N. Am.
- Oophyte**, gametophyte, *Pteridophyta*; -sphere, ovum.
- Open** (aestivation), l. not even meeting by their edges.
- Opercularia** Gaertn. Rubiaceae (II. 7). 14 Austr.
- Operculina** Silva Manso (*Ipomoea* p.p. BH.). Convolvulaceae (1).
20 trop. Am., As. *O. turpethum* Silva Manso yields a drug.
- Operculum** (Lat.), a lid.
- Ophelia** D. Don = *Swertia* L. p.p. (Gentian.).
- Ophio-** (Gr. pref.), snake.
- Ophiobotrys** Gilg. Flacourtiaceae (7). 1 Cameroons.
- Ophiocaryon** Schomb. Sabiaceae. 1 Guiana (snake-seed).
- Ophiocaulon** Hook. f. (*Adenia* p.p. EP.). Passifloraceae. 6 Afr.
- Ophioglossaceae**. Filicales Ophioglossales. 3 gen., 50 sp., trop., temp.
Small herbs, some trop. sp. epiphytic; there is a root-stock or rhiz. bearing roots in acropetal succession, and giving off l. which project above the soil. The l. bases are usu. fleshy and fit closely together, concealing the stem. The l. splits into a dorsal and a ventral part, the former being the 'sterile' green blade, the latter the 'fertile' sporangiferous spike, often much branched and containing the sporangia sunk in its tissues. The spores are all of one kind and give rise to subterranean colourless prothalli, living saprophytically.
Genera: Ophioglossum (sporangia sessile, in two rows, forming a narrow close spike), Botrychium (sporangia in small crested clusters forming a long loose spike), Helminthostachys (sporangia peltate, borne on sporangiophores which arise from the two sides of the fertile spike). [Lang in *Ann. Bot.* 1902, p. 23.]
- Ophioglossales**. The 3rd order of Filicales (q.v.). Only fam. Ophioglossaceae.
- Ophioglossum** L. Ophioglossaceae. 30 trop. and temp. *O. vulgatum* L., adder's-tongue, in Brit. The l. are developed very slowly, one appearing above the soil each year. Adv. buds are formed on the roots and thus the pl. multiplies veg. The sporangiferous spike is usu. unbranched, except in *O. palmatum* L., where "instead of a single spike there are a number arranged in two rows along the sides of the upper part of the petiole and the base of the lamina." (This sp. and *O. pendulum* L. are epiphytic.) The roots most often arise in relation to the l., one at the base of each; commonly unbranched.
- Ophione** Schott. Araceae (IV). 1 Colombia.
- Ophiopogon** Ker-Gawl. Liliaceae (VIII) (Haemod. BH.). 5 Japan, China. The mucilaginous tubers of *O. japonicus* Ker-Gawl. are ed.
- Ophiorrhiza** L. Rubiaceae (I. 2). 55 Indomal.
- Ophiorrhizophyllum** Kurz. Acanthaceae (1). 1 Burma.
- Ophioxylon** L. = *Rauwolfia* Plum. (Apocyn.).
- Ophiurus** Gaertn. f. Gramineae (2). 4 palaeotrop.
- Ophryococcus** Oerst. Rubiaceae (I. 7). 1 Nicaragua.
- Ophryosporus** Meyen. Compositae (2). 15 trop. and subtrop. Am.

Ophrys L. Orchidaceae (II. 1). 30 Eur., W. As., N. Afr. (*O. apifera* Huds., bee-orchis, *O. aranifera* Huds., spider-orchis, *O. muscifera* Huds., fly-orchis, in Brit.). Terrestrial herbs with habit and fl. chars. of Orchis. *O. apifera* is one of the few self-fert. orchids. If the pollinia are not removed by insects (as in Orchis) they drop out of the anther and dangle on their long caudicles in front of the stigma, against which they get blown or knocked (see Darwin).

Ophthalmoblapton Allem. Euphorbiaceae (A. II. 7). 4 Brazil.

Opicrina Rafin. Compositae (inc. sed.). 2 N. Am.

Opilia Roxb. Opiliaceae. 6 palaeotrop. Fl. ♂, heterochlam., with seam-like K. G with one ov. without integument.

Opiliaceae (EP.; *Olacineae* p.p. BH.). Dicots. (Archichl. Santalales). Only genus *Opilia*, *q.v.*

Opisthocentra Hook. f. Melastomaceae (I). 1 N. Brazil.

Opium, *Papaver somniferum* L.

Opizia J. et C. Presl. Gramineae (II). 1 Mexico.

Oplismenus Beauv. Gramineae (5). 5 trop. and subtrop.

Oplothea Nutt. = *Froelichia* Moench (Amarant.).

Opocunonia Schlechter. Cunoniaceae. 4 New Guinea.

Opopanax Koch. Umbelliferae (III. 6). 4 Medit. Gum opopanax, used in perfumery, is obtained from incisions in the roots.

Opopanax, gum -, *Opopanax*.

Oporanthus Herb. = *Sternbergia* Waldst. et Kit. p.p. (Amaryll.).

Opposite (l.), two at a node, at angle 180°; -**ifolius**, with opp. l.

-**opsis** (Gr. suff.), -like.

Opulus Tourn. ex L. = *Viburnum* L. p.p. (Caprifol.).

Opulaster Medic. (*Neillia* BH., *Physocarpus* EP.). Ros. (I. I). 20 N. Am.

Opuntia Tourn. ex Mill. Cactaceae (II). 200 Am. Some have become troublesome weeds in Austr., &c. Fleshy stemmed, usu. with small fleshy l., which drop off very early (see fam.). In *O. subulata* Engelm. the l. are large and do a good deal of assimilation. Some, e.g. *O. Stapeliae* DC., have mammilla-like cushions; *O. brasiliensis* Haw. has the main stem cylindrical and the lat. ones flat; most have all the stems flattened, e.g. *O. vulgaris* Mill. (prickly pear), *O. Ficus-indica* Mill. (Indian fig), &c. (see Goebel's *Pflanzenbiol. Sch.* I. p. 73 seq.). The l. of the lat. shoots usu. form groups of thorns, but in *O. diademata* Lem. are ribbon-like and scaly. Many are veg. propagated by the detachment of branches, e.g. *O. fragilis* Haw., which rarely flowers at all. The fr. of prickly pear, &c. are ed.; some are used for hedge-making, others as food for cochineal-insects (see Nopalea). [For *O. coccinellifera* Steud. see Nopalea.]

Opuntiales. The 28th order of Archichlamydeae.

Orache, *Atriplex*.

Orange, *Citrus Aurantium* L.; -**grass** (Am.), *Hypericum Sarothra* Michx.; **Jamaica mandarin** -, *Glycosmis*; **mandarin** -, *Citrus nobilis* Lour.; **osage** -, *Maclura aurantiaca* Nutt.; -**root** (Am.), *Hydrastis*; **wild** - (W.I.), *Drypetes*.

Orania Zippel. Palmae (IV. 1). 5 Malay Archipelago.

Orbea Haw. = *Stapelia* L. p.p. (Asclep.).

Orbicular (l.), circular in outline.

Orbignya Mart. ex Endl. Palmae (IV, 2). 7 Brazil, Bolivia.

Orbinda Nor. Inc. sed. Nomen.

Orchadocarpa Ridl. Gesneriaceae (1). 1 Malay Peninsula.

Orchard grass (Am.), *Dactylis glomerata* L.

Orchiaceras × E. G. Camus. Orchidaceae. Hybrid, Orchis-Aceras.

Orchicoeloglossum × Aschers. et Graebn. Orchid. Hybrid, Orchis-Coeloglossum.

Orchidaceae (EP., BH.). Monocots. (Microspermae). 450 gen., 7500 sp., cosmop., abundant in trop., rare in arctic regions. They agree in some general features of habit, &c., e.g. they are all perennial herbs, but differ widely in detail, owing to the diversity of conditions in which they exist—land-plants, epiphytes, saprophytes, &c. Within the trop. they form an important feature of the veg., living chiefly as epiphytes. Most temp. zone forms are terrestrial.

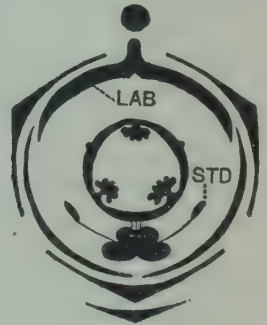
The plant as a whole may be built up in one of three ways, (1) a monopodium, the main axis growing steadily on, year after year, and bearing the fls. on lat. branches; (2) an *acranthous* sympodium, the main axis being composed of annual portions of successive axes, each of which begins with scale l. and ends in an infl.; (3) a *pleuranthous* sympodium, where the infls. are borne on lateral axes, the shoot which for the current year continues the main axis stopping short at the end of its growing period, and not ending in an infl. These types of construction are used in classification (see below).

The saprophytes are few; they have no green l.; below the soil, in the humus, is a fleshy rhiz., with (*Neottia*) or without roots. It is much branched, and does part or all of the work of absorption. Mycorrhiza occurs in most or all. The terrestrial forms are all sympodial, and have usu. a rhiz.; each annual shoot bends up into the leafy shoot of the current year. Many being xero., and all perenn., it becomes a necessity that there should be a storage reservoir to last over the non-veg. period of the year. In a great many this takes the form of a thickened internode of the stem: in many again, among which the Brit. orchids are included, the bud for the next year's growth, i.e. the next part of the sympodium, is laid down at the base of the stem, and from it is developed a thick and fleshy adv. root, forming a large tuber, which lasts over the winter.

Coming lastly to the epiphytes, abundant in the trop., we find great variety. [See Schimper, *Die epiphytische Vegetation Amerikas.*] They are mostly sympodial, but the few monopodial O. also belong to this group. The exceedingly light seeds and the xero. habit of many O. fit them to become epiph. The roots of the epiph. forms are of interest. In the first place, to fasten the pl. to its support there are 'clinging' roots, insensitive to gravity, but negatively heliotropic. The niche between the pl. and its support and the network formed by the roots act as reservoirs for humus, and into this project 'absorbing' roots, branches from the others; these are usu., Schimper asserts, negatively geotropic. Finally the true aerial roots hang down in long festoons. The outer layers of cells (the epidermis and *velamen*) are dead and perforated, and act as a sponge to absorb water trickling over them. Their internal tissue is green (as may be seen on wetting a root) and assimilates. During the dry season a great proportion of

the O. drop their l. (though they may flower), and 'hibernate' in the condition of fleshy *pseudobulbs*. One *pseudobulb*, which is a thickened stem-internode, is usu. formed each year. In this, water and other reserves are stored. Those epiphytes which do not form these tubers have fleshy l. which serve the same end; the fleshy leaved orchids, e.g. *Vanilla*, have usu. a very feebly developed velamen. Some monopodial forms have no green l. at all, assimilating either by the surface of the stem, or by the long dangling aerial roots (*Polyrrhiza*, &c.).

The infls. are racemose, very often spikes, which look like racemes, the long inf. ovary resembling a stalk. The fl. is $\cdot\downarrow$ and departs from the ordinary Monocot. type. There are two chief divisions of O., with different fls., the *Monandrae* and *Pleonandrae*, with 1 and 2 sta. respectively; the great majority are monandrous. P in 2 whorls, epig., petaloid. The post. petal is usu. larger than the rest, and is termed the *labellum*; by the twisting (*resupination*) of the ovary through 180° it comes round to the ant. side of the fl. and forms a landing place for insects. In many O. its structure is exceedingly complex. The essential organs of the fl. are all comprised in a central structure by which the O. can be recognised at a glance, viz. the *column*, which consists in the simpler cases of the combined style and sta. (to use the old-fashioned expression; in reality it is very probably an outgrowth of the axis, bearing the anthers and stigmas at the top). In the monandrous forms the column exhibits one anther and two fertile stigmas (often $\pm$ confluent), together with a special organ, the *rostellum*, which repres. the third stigma. The single anther is the ant. one of the outer whorl (if we imagine the fl. of O. derived from a typical 3-merous fl.); the other two of this whorl are entirely absent, and also all those of the inner whorl, though in some genera, e.g. *Orchis*, the ant. two are repres. by stds. upon the sides of the column. The two fertile stigmas are the post. pair, and the third (ant.) is repres. by the rostellum (in using the terms ant. and post., the resupination is supposed not to have occurred).



Floral diagram of *Orchis*, before resupination (after Eichler, modified); LAB = labellum, STD = staminode.

The various organs face the labellum, and, in the fl. of a simple O., e.g. *Orchis*, can easily be made out. A little above the base are the two stigmas, then above these a projecting point, the rostellum, and above this again, and behind it, forming the apex of the column, is the anther, which shows two lobes. Each is occupied by a *pollinium*, or mass of pollen. Under the microscope the grains of pollen are seen to be tied together in packets by elastic threads; these unite at the base of the pollinium and form a cord, the *caudicle*, which runs down into, and is attached to part of the rostellum.

The simple construction found in *Orchis*, &c., as thus described, is replaced by much more complex arrangements in many. The labellum itself may be rendered very complex, by the addition of spurs and other outgrowths; often outgrowths of the summit of the receptacle take place, displacing some of the organs, thus for example

in *Drymoda* and others, the labellum and the sepals on either side of it are carried forward on an axial protuberance in such a way that the sepals appear to spring from the labellum, the axial growth (*chin*) appearing like the basal part of this organ. Some of these constructions are very complex. Several are described in connection with the genera to which they belong.

Similarly the column shows great variety in structure (refer as above). One point may be mentioned specially as of importance in classification. In the simple case of *Orchis*, &c., described above, the base of the anther loculi is against the rostellum; such cases are called *basitonic*; in others it is the apex that is next the rostellum (*Oncidium*, &c.), and these are *acrotonic*.

[*Diandrae*. So far only monandrous forms have been considered. In *Cypripedium* and its allies the column has 2 anthers, no rostellum, and a simple stigma, composed of the 3 carpellary stigmas. The two sta. belong to the inner whorl, and the sta. which in *Monandrae* is fertile, is here repres. by a large std. The stigma is not sticky, but the pollen is, and it is not combined into pollinia.]

The ovary is inf. in all O., uniloc. with 3 parietal plac. (exc. *Apostasia*), and ∞ ovules, which do not develope until fert. of the fl. occurs.

The adaptations of orchid flowers to *fertilisation* by insects are endless, and many very complicated. Reference must be made to text-books for the details. No student should omit to read *Darwin's Fertilisation of Orchids*, at least the first two and the last chapters. In it will be found accounts of the mech. of most of the common gen. A few general points only can be mentioned here; in the description of the individual gen. other details are given. Very few secrete free honey; in most cases the insect has to bite into or drill the tissue for the juice therein contained; this tissue is usu. part of the labellum—often a spur at the base—or the basal part of the column. The pollinia are removed as a rule when the insect is going out of the fl. In most cases the insect in entering displaces the rostellum or some portion of it, and thereby exposes and comes into contact with a sticky mass (due to disorganisation of cells formerly living). This becomes cemented to the insect while it is drilling for honey, and as the insect goes out again it takes with it the viscid lump, together with the pollinia, either merely glued to it, or attached by caudicles. In many cases the pollinia are in such a position that when the insect enters the next fl. they will touch the stigmas. In others this is not so, e.g. *Orchis*, where the anthers and stigma are far apart on the column, and in such cases the pollinia, on getting out of the anther, execute a hygroscopic movement which brings them into the proper position on the insect's body to strike the stigmas. Such is the general principle of the orchid mechanism, but the variety in detail is endless. Many fls. have the most extraordinary structure, e.g. *Coryanthes*, *Stanhopea*, *Vanda*, &c. See under gen.

The *fruit* is a caps., containing usu. a gigantic number of exceedingly small and light seeds, which are well suited to wind distr. (hence, among other causes, the epiph. habit of so many).

The O. are favourites in horticulture, and very many gen. are cult.

There are many generic hybrids; the names of most of those as yet produced, *e.g.* *Orchicoeloglossum*, *Phaiocalanthe*, *Zygocolax*, are included in this book. Vanilla is the only orchid of economic importance.

Classification and chief genera (after Pfitzer):

I. PLEONANDRAE (two stamens).

1. Apostasiae: *Apostasia*.
2. Cyripedileae: *Cypripedium*.

II. MONANDRAE (one stamen).

- a. *Basitoniae* (basitonic, anther not falling off):
1. Ophrydeae: *Ophrys*, *Orchis*, *Habenaria*, *Disa*.
- b. *Acrotonae* (acrotonic, anther usually falling easily):

a. **ACRANTHAE** (acranthous sympodial):

- I. Convolutae** (l. convolute in bud, with no distinction between blade and sheath):
2. Neottieae: *Vanilla*, *Epipactis*, *Neottia*.
- II. Articulatae** (as I., but with a joint between blade and sheath):

3. Coelogyneae: *Coelogyne*, *Pholidota*.

III. Duplicatae (l. folded in bud):

4. Liparideae: *Liparis*, *Corallorhiza*.
5. Polystachyeae: *Galeandra*.
6. Laelieae: *Epidendrum*, *Cattleya*, *Laelia*.
7. Sobralieae: *Sobralia*.
8. Pleurothallidieae: *Masdevallia*, *Pleurothallis*.
- β. **PLEURANTHAE** (pleuranthous sympodial):
- I. Convolutae** (l. convolute in bud):
9. Phajeae: *Phajus*, *Calanthe*.
10. Cyrtopodieae: *Lissochilus*.
11. Cataseteae: *Mormodes*, *Catasetum*.
12. Lycasteae: *Lycaste*.
13. Gongoreae: *Coryanthes*, *Stanhopea*, *Gongora*.
14. Zygopetaleae: *Zygopetalum*.

II. Duplicatae (l. folded in bud):

1. *Sympodiales* (sympodial).
15. Dendrobieae: *Dendrobium*, *Eria*.
16. Bolbophylleae: *Drymoda*, *Bolbophyllum*.
17. Cymbidieae: *Cymbidium*.
18. Maxillarieae: *Maxillaria*, *Scuticaria*.
19. Oncidieae: *Ada*, *Odontoglossum*, *Oncidium*.
2. *Monopodiales* (monopodial).
20. Sarcantheeae: *Phalaenopsis*, *Vanda*, *Angraecum*, *Polyrrhiza*, *Aerides*.

Orchidantha N. E. Br. (*Lowia* Hook. f.). Musaceae (III). 2 Malaya.

Orchideae (BH.) = Orchidaceae.

Orchidotypus Kränzlin. Orchidaceae (II. 8). 1 Peru.

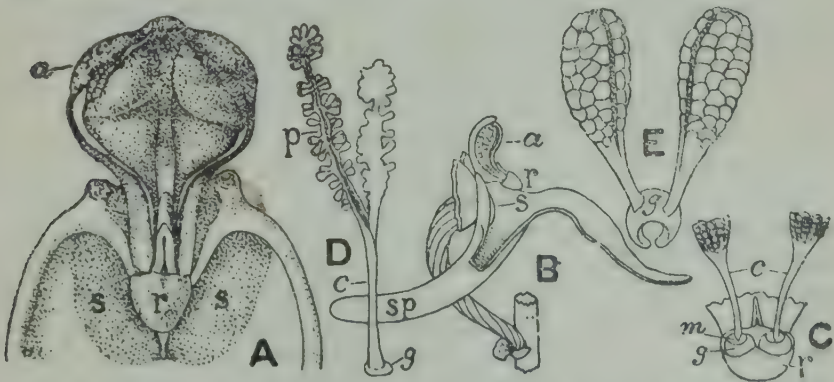
Orchid-tree, *Amherstia nobilis* Wall.

Orchigymnadenia × E. G. Camus. Orchid. Hybrid, *Orchis-Gymnadenia*.

Orchis (Tourn.) L. (BH. incl. *Anacamptis* Rich., *Himantoglossum* Spreng.). Orchidaceae (II. 1). 70 Eur., temp. As., N. Afr., Am.

(10 Brit., incl. *O. mascula* L., early purple orchis, and *O. maculata* L., spotted orchis.) Sympodial perennials forming one tuber each year (see fam.). The fls. stand in a dense spike and have curious mech. for insect fert. The anther is basitonic and well above the stigmas. The rostellum has an outer firm pouch, inside which is the viscid substance to which are firmly attached the caudicles of the pollinia. An insect entering the fl. probes the spur of the labellum and its back comes into contact with the rostellum and depresses the pouch, causing the viscid substance to adhere to the insect. The tissue of the spur has to be drilled for honey, and while this is being done the cement rapidly sets, so that, as the insect leaves the fl., it takes with it the pollinia, standing upright on their caudicles. If they remained in this position they would never touch the stigmas of another fl., but as soon as the caudicles are exposed to air, they contract on the side towards the base of the fl. (i.e. towards the insect's head) and move the pollinia downwards from ! to -. In this position, when the insect enters another fl., they pass under the rostellum and strike the stigmas. [See Darwin's *Orchids* for details.]

Orchis, *Orchis*, any terrestrial member of Orchidaceae; **bee-**, *Ophrys apifera* Huds.; **bird's nest-**, *Neottia*; **butterfly-**, *Habenaria*, *Oncidium*; **dove-**, *Peristeria*; **early purple-**, *Orchis mascula* L.; **fly-**, *Ophrys muscifera* Huds.; **frog-**, *Habenaria* (*Coeloglossum*) *viridis* R. Br.; **lady's slipper-**, *Cypripedium*; **man-**, *Aceras anthropophora* R. Br.; **musk-**, *Herminium Monorchis* R. Br.; **scented-**, *Gymnadenia conopsea* R. Br.; **spider-**, *Ophrys aranifera* Huds.; **spotted-**, *Orchis maculata* L.



- A-D. *Orchis mascula* (Purple Orchis). A. Front view of anther and top of column; *a*, anther; *s*, *s*, pair of stigmatic surfaces, one on each side of the rostellum, *r*. The pollen-sacs have split lengthwise, exposing the pollinia in the upper portion. On either side of the anther is a blunt outgrowth representing a sterile stamen. B. Dissection of flower, side view, showing part of lip and the spur (*sp*) and the relation of rostellum (*r*) and stigma (*s*) to entrance of spur. C. Base of pair of pollinia, front view; *c*, caudicles; *r*, rostellum; *g*, gland; *m*, membranous disc. D. Single pollinium, the pollen-containing portion separated, showing arrangement of packets of pollen on the two main axes. E. Pollinia of *O. pyramidalis* attached to a common gland (*g*).

All enlarged. A, D, from original drawing by Fr. Bauer. B, C, E, after Darwin.

Orchiserapias × E. G. Camus. Orchidaceae. Hybrid, Orchis-Serapias.
Orcuttia Vasey. Gramineae (10). 1 California.

Ordeal bark, *Erythrophlaeum* ; - **bean**, *Physostigma*.

Oreacanthus Benth. Acanthaceae (IV. B). 1 Cameroons.

Oreanthes Benth. Ericaceae (III. 2). 1 Ecuador.

Oregon cedar, *Chamaecyparis Lawsoniana* Parl.

Oreinotinus Oerst. = *Viburnum* L. p.p. (Caprif.).

Oreiostrachys Gamble. Gramineae (13). 1 Java.

Oreo- (Gr. pref.), mountain.

Oreobambos K. Schum. Gramineae (13). 1 E. Afr.

Oreobatus Rydberg (*Rubus* p.p.). Rosaceae (III. 2). 2 N. Am.

Oreobliton Dur. et Moq. Chenopodiaceae (A). 1 Algeria.

Oreobolus R. Br. Cyperaceae (II). 3 S. Am., Austr., N.Z., Polynesia.

Oreocallis Small (*Leucothoe* p.p.). Ericaceae (II. 1). 1 N.W. U.S.

Oreocarya Greene (*Krynitzkia* p.p.). Boraginaceae (IV. 2). 20 Pac. N. Am.

Oreocereus Riccob. (*Pilocereus* p.p.). Cactaceae (III. 1). 1 Boliv.

Oreocharis Benth. Gesneriaceae (1). 8 China, Japan.

Oreochloa Link. Gramineae (10). 2 S. Eur.

Oreochrysum Rydberg (*Aplopappus* p.p.). Compositae (3). 1 N. Am.

Oreocnida Miq. = *Villebrunea* Gaudich. (Urtic.).

Oreodaphne Nees et Mart. = *Ocotea* Aubl. p.p. (Laur.).

Oreodoxa Willd. Palmae (IV. 1). 6 trop. Am., W.I. Monoec.; fls. in groups of 3, a ♀ between two ♂. *O. oleracea* Mart. is the cabbage palm; the young head of l. is cut out and eaten. The fr. yields an oil, and a form of sago is obtained from the stem (see *Metroxylon*). The l. are used for thatch, &c. *O. regia* H. B. et K. is the royal palm. Both are extensively used for avenues.

Oreograstis K. Schum. Cyperaceae (1). 1 E. trop. Afr.

Oreolirion E. P. Bickn. (*Sisyrinchium* p.p.). Iridaceae (II). 2 N. Am.

Oreomitra Diels. Anonaceae (2). 1 New Guinea.

Oreomunnea Oerst. (*Engelhardtia* BH.). Juglandaceae. 1 C. Am.

Oreomyrrhis Endl. Umbelliferae (III. 4). 6 S. temp.

Oreopanax Decne. et Planch. Araliaceae (1). 80 trop. Am.

Oreophila D. Don = *Hypochoeris* L. p.p. (Comp.).

Oreophylax Endl. = *Gentiana* L. p.p. (Gent.).

Oreopolus Schlecht. (*Cruckshankia* p.p. EP.). Rubi. (I. 2). 1 Andes.

Oreorchis Lindl. Orchidaceae (II. 5). 5 Himalaya to Japan.

Oreosciadium Wedd. (*Apium* p.p. EP.). Umbellif. (III. 5). 5 Andes.

Oreoselinum (Tourn.) Adans. = *Peucedanum* Tourn. (Umbel.).

Oreoseris DC. = *Gerbera* Gronov. p.p. (Comp.).

Oreosolen Hook. f. Scrophulariaceae (III. 1). 2 Himalaya.

Oreosphacus Phil. Labiatae (VI). 1 Chili.

Oreostemma Greene (*Aster* p.p.). Compositae (3). 4 N. Am.

Oreostylidium Berggr. Stylidiaceae. 1 New Zealand.

Oreosyce Hook. f. Cucurbitaceae (2). 2 W. trop. Afr.

Oreothyrsus Lindau. Acanthaceae (IV. B). 2 New Guinea.

Oreoxis Rafin. (*Cymopterus* p.p.). Umbellif. (III. 5). 1 Colorado.

Oresitrophe Bunge. Saxifragaceae (1). 1 China.

Orestia Ridl. Orchidaceae (II. 4). 1 St Thomas I., W. Afr.

Orgadium (Cl.), an open woodland formation.

Organs, the parts of a plant regarded as performing functions.

Orias Dode. Lythraceae. 1 Cochinchina.

- Oricia** Pierre. Rutaceae (IV). 3 trop. Afr.
- Oriente** (Lat.), eastern.
- Orientation**, definite position with regard to stimuli.
- Origanum** Tourn. ex L. Labiatae (VI). 7 Eur., Medit. *O. vulgare* L. (marjoram) in Brit., used as a flavouring herb. *O. Majorana* L. yields oil of marjoram by distillation.
- Orites** R. Br. Proteaceae (II). 6 temp. E. Austr.
- Oritrephes** Ridl. Melastomaceae (I). 1 Malay Peninsula.
- Orixa** Thunb. (*Celastrus* p.p. *BH.*). Rutaceae (I). 1 Japan.
- Orlaya** Hoffm. (*Daucus* p.p. *BH.*). Umbelliferae (III. 2). 1 Medit.
- Orleanisia** Barb. Rodr. Orchidaceae (II. 6). 1 Brazil.
- Ormocarpum** Beauv. (Diphaca Lour.). Leguminosae (III. 7). 10 trop. and subtrop. |*.
- Ormosciadium** Boiss. Umbelliferae (III. 6). 1 W. As.
- Ormosia** Jacks. Leguminosae (III. 1). 25 trop. The seeds of *O. dasycarpa* Jacks. (bead or necklace tree) show the same red and black surface as *Abrus precatorius*.
- Ornamental plants**, whether cult. for fl., fr. or l., or as ornamental shrubs or trees, are very numerous, and cannot be listed. Against most important genera thus employed are placed such notes as "cult. orn. fl." So far as the cold zones are concerned they may be roughly classified into *hardy* pl., which will stand the winter out of doors, *half-hardy*, which require protection during winter, or if annual to be germinated under glass and planted out, *cool house* plants from warmer climates than England, *succulent house* plants from dry climates, and *stove* plants from hot moist trop. climates. Or in another way, they may be grouped into ornamental trees, shrubs, and herbs, with the minor groups of water-plants, climbers, &c.
- Ornantes** Rafin. = *Fraxinus* Tourn. (Olea.).
- Ornithidium** Salisb. Orchidaceae (II. 18). 25 trop. Am., W.I. Cult.
- Ornitho-** (Gr. pref.), bird; **-phily**, fert. by birds.
- Ornithobaea** Parish. Gesneriaceae (I). 1 S. Burma.
- Ornithocarpa** Rose. Cruciferae (3). 1 Mexico.
- Ornithocephalus** Hook. Orchidaceae (II. 19). 20 trop. Am., W.I.
- Ornithochilus** Wall. ex Lindl. Orchidaceae (II. 20). 2 E. As.
- Ornithogalum** (Tourn.) L. Liliaceae (v). 90 temp. |*. *O. umbellatum* L. (star-of-Bethlehem) in Brit.
- Ornithoglossum** Salisb. Liliaceae (I). 2 S. Afr.
- Ornithophora** Barb. Rodr. (*Sigmatostalix* p.p. *EP.*). Orchidaceae (II. 19). 1 Brazil.
- Ornithopus** L. Leguminosae (III. 7). 8 Medit., W. As., trop. Afr., S. Brazil. *O. perpusillus* L. in Brit. (bird's foot). *O. sativus* Brot. (seradella, serratella) affords good fodder.
- Ornithostaphylos** Small (*Arctostaphylos* p.p.). Ericaceae (II. 3). 1 Lower California.
- Ornithoxanthum** Link = *Gagea* Salisb. (Lili.).
- Ornitrophe** Comm. ex Juss. = *Schmidelia* L. (*BH.*) = *Allophylus* L.
- Ornus** Neck. = *Fraxinus* Tourn. (Olea.).
- Orobanchaceae** (*EP.*, *BH.*). Dicots. (Sympet. Tubiflorae; Personales *BH.*). 12 gen., 140 sp., chiefly N. temp. |*; a few Am. and trop. All are parasitic herbs with little or no chlorophyll, attached by

suckers formed upon their roots to the roots of other plants (the seeds of *Orobanche* only germinate when in contact with a root of a host). For details see genera. Infl. term., a raceme or spike (exc. *Phelipaea*, which has a sol. term. fl.). Fl. ♀, ♂. K (2—5) hypog., C (5), imbr., 2-lipped; A 4, didynamous, epipet.; anthers opening longitudinally; G usu. (2), rarely (3), 1-loc. Placentae parietal, often T-shaped in section or branched; ovules ∞, anatropous; style 1. Loculic. caps.; seeds small, with minute undifferentiated embryo in oily endosp.

Chief genera: *Orobanche*, *Christisonia*, *Lathraea*, *Phelipaea*.

Orobanche (Tourn.) L. Orobanchaceae. 90 temp. and subtrop.; 7 in Brit. (broom-rape). Parasitic by their roots upon the roots of other pl.; no green tissue. *O. ramosa* L. is common on hemp. *O. major* L. (*O. elatior* Sutton) on *Centaurea*, &c. (in Brit.), *O. minor* Sutton on clover. Some are confined to one host, e.g. *O. Hederae* Duby to ivy, others are more general in their attacks.

Orobis (Tourn.) L. = *Lathyrus* Tourn. p.p. (Legum.).

Orochaenactis Coville (*Chaenactis* p.p.). Compositae (6). 1 Calif.

Orogenia S. Wats. Umbelliferae (III. 4). 2 W. N. Am.

Orontium L. Araceae (III). 1 Atl. N. Am. Aquatic.

Oropetium Trin. Gramineae (12). 1 Indomal.

Orophaca Britton (*Astragalus* p.p.). Leguminosae (III. 6). 3 N. Am.

Oropheia Blume. Anonaceae (2). 32 Indomal.

Orophochilus Lindau. Acanthaceae (IV. A). 1 Peru.

Orophytium (Cl.), a subalpine plant formation.

Oroxylon Vent. Bignoniaceae (1). 1 Indomal.

Orphanidesia Boiss. et Bal. Ericaceae (II. 1). 1 W. As.

Orphium E. Mey. Gentianaceae (1). 1 Cape Colony.

Orpine, *Sedum Telephium* L.

Orris root, *Iris florentina* L.

Ortega L. Caryophyllaceae (I. 3). 2 Spain, Italy.

Ortgiesia Regel. Bromeliaceae (4). 2 trop. Am.

Orthaea Klotzsch (*Thibaudia* p.p. EP.). Ericaceae (III. 2). 1 Peru.

Orthantha Kerner. Scrophulariaceae (III. 3). 3 Eur., W. As.

Orthanthera Wight. Asclepiadaceae (II. 3). 4 Afr., India.

Orthechites Urb. (*Echites* p.p.). Apocynaceae (II. 1). 1 Jamaica.

Ortho- (Gr. pref.), upright, straight; **-plocous**, *Cruciferae*; **-stichies**, straight ranks; **-tropous** (ov.), in a straight line with the funicle; **-tropic**, placing itself in line with the stimulus.

Orthocarpus Nutt. Scrophulariaceae (III. 3). 30 W. Am.

Orthoceras R. Br. Orchidaceae (II. 2). 1 S.E. Austr., New Zealand.

Orthoclada Beauv. Gramineae (10). 1 trop. Am. L. petiolate.

Orthogoneuron Gilg. Melastomaceae (1). 1 trop. Afr.

Orthogynium Baill. Menispermaceae. 1 Madagascar.

Orthopappus Gleason (*Elephantopus* p.p.). Compos. (1). 1 trop. Am.

Orthopenthea Rolfe. Orchidaceae (II. 1). 10 S. Afr.

Orthophytum Beer (*Prantleia* EP., *Pitcairnia* BH.). Bromeliaceae (4). 2 C. Brazil.

Orthopogon R. Br. = *Oplismenus* Beauv. (Gram.).

Orthopterygium Hemsl. (*Juliania* p.p.). Julianiaceae. 1 Peru.

Orthorrhiza Stapf (*Chorispora* p.p.). Cruciferae (4). 1 Persia.

- Orthosia** Decne. (*Vincetoxicum* Moench *BH.*, *Cynanchum* L. p.p. *EP.*).
 Asclepiadaceae (II. 1). 12 S. Am.
- Orthosiphon** Benth. Labiatae (VII). 50 Indomal., trop. Afr.
- Orthostemon** Berg. (*Feijoa* p.p. *BH.*). Myrtaceae (I). 1 subtrop. S. Am.
- Orthostemon** R. Br. (*Canscora* p.p.). Gentianaceae (I). 1 trop. Afr.
- Orthotactus** Nees = *Dianthera* Gronov. (*BH.*) = *Justicia* L.
- Orthrosanthus** Sweet. Iridaceae (II). 7 Austr., S. Am. to Mexico.
- Orumbella** Coulter et Rose (*Ligusticum* p.p.). Umbelliferae (III. 5).
 1 Alaska.
- Orychophragmus** Bunge (*Moricandia* p.p. *BH.*). Crucif. (4). 1 N. China.
- Oryctanthus** Eichl. (*Loranthus* p.p. *BH.*). Loranth. (I). 10 trop. Am.
- Oryctes** S. Wats. Solanaceae (2). 1 Nevada.
- Orygia** Forsk. Aizoaceae (I). 1 Afr. to Mysore.
- Oryza** L. Gramineae (6). 6 trop., incl. *O. sativa* L. (rice), one of the chief food plants of the world, an annual, wild in Indomal., S. Am. The cult. rices are probably derived polyphyletically from some of these. The main kinds are hill and swamp rice, the former chiefly grown by wild tribes. Swamp rice is chiefly cult. in Bengal, S. India, S.E. As., Japan, China and S. Am., and occurs in ∞ vars. It is cult. in shallow water till nearly ripe, when the water is drained off. The grain in the husk is known as paddy.
- Oryzopsis** Michx. Gramineae (8). 15 N. temp.
- Osage orange**, *Maclura aurantiaca* Nutt.
- Osbeckia** L. Melastomaceae (I). 50 palaeotrop.
- Osbornia** F. Muell. Myrtaceae (II. 1). 1 N.E. Austr.
- Oschatzia** Walp. (*Azorella* p.p. *BH.*). Umbelliferae (I. 1). 2 Austr.
- Oserya** Tul. et Wedd. Podostemaceae. 5 Brazil to Mexico.
- Osier**, *Salix viminalis* L.
- Osmanthus** Lour. Oleaceae. 10 E. and S. As., Polynes., N. Am.
O. fragrans Lour. (*Olea fragrans* Thunb.), often cult., has ed. fr., and its l. are used to perfume tea.
- Osmelia** Thw. Flacourtiaceae (7). 3 Indomal.
- Osmia** Sch.-Bip. (*Eupatorium* p.p.). Compositae (2). 3 N. Am.
- Osmites** L. Compositae (4). 6 Cape Colony.
- Osmitopsis** Cass. Compositae (4). 1 Cape Colony.
- Osmohydrophora** Barb. Rodr. Bignoniaceae (I). 1 Amazonas.
- Osmorhiza** Rafin. Umbelliferae (III. 2). 15 As., Am.
- Osmoxylon** Miq. Araliaceae (1). 2 Malay Archipelago.
- Osmunda** L. Osmundaceae. 10 temp. and trop. *O. regalis* L. (royal fern) in Brit. has a root-stock sometimes a foot high, like the stem of a tree fern, bearing scale l. below the soil and ordinary l. above. The fronds are large (1—10 feet); the lower pinnae are veg., the upper are repr. only and form a sort of panicle. They are densely covered with sori, which have no indusium and have a peculiar annulus consisting of a round group of cells at one side of the apex. The sporangium dehiscens longitudinally. Other sp. have the fertile pinnae on the lower part of the l., others again have separate veg. and repr. l.
- Osmundaceae**. Filicales Leptosporangiatae. 2 gen., 12 sp., trop. and temp. Short-stemmed ferns, with naked sori. The sporangia are

shortly stalked and have an annulus, consisting of a roundish group of cells at one side of the apex ; they open by a longitudinal fissure.

Genera: Osmunda (sori on special pinnae), Todea (sori on backs of ordinary pinnae).

- Ossaea** DC. Melastomaceae (1). 55 trop. Am., W.I.
Ostenia Buchenau. Butomaceae. 1 Uruguay.
Osteocarpum F. Muell. (*Threlkeldia* BH.). Chenopod. (A). 5 Austr.
Osteocarpus Phil. (*Alona* p.p.). Nolanaceae. 4 Chili.
Osteomeles Lindl. Rosaceae (11). 10 Andes, Polynesia.
Osteophloeum Warb. (*Myristica* p.p.). Myristic. 1 Amazonas.
Osteospermum L. Compositae (9). 40 S. Afr.
Osterdamia Neck = *Zoysia* Willd. (Gram.).
Ostiolate, with a mouth.
Ostodes Blume. Euphorbiaceae (A. 11. 5). 6 Indomal.
Ostrearia Baill. ex Niedenzu. Hamamelidaceae. 1 Queensland.
Ostrich fern, *Matteuccia Struthiopteris*.
Ostrowskia Regel. Campanulaceae (1). 1 Turkestan.
Ostrya Mich. ex L. Betulaceae. 2 N. temp. Like *Carpinus*. *O. virginica* Willd. (lever-wood) furnishes a hard wood.
Ostryocarpus Hook. f. Leguminosae (III. 8). 1 trop. W. Afr.
Ostryoderris Dunn. Leguminosae (III. 8). 3 trop. W. Afr.
Ostryopsis Decne. Betulaceae. 1 E. Mongolia.
Oswego tea, *Monarda*.
Osyricera Blume. Orchidaceae (II. 16). 2 Java, New Guinea.
Osyridicarpos A. DC. Santalaceae. 3 Abyssinia to S. Afr.
Osyris L. Santalaceae. 7 |*.
Otacanthus Lindl. Scrophular. (II. 6), (*Acanth.* BH.). 2 Brazil.
Otaheite apple (W.I.), *Eugenia malaccensis* L. ; - **gooseberry** (W.I.), *Phyllanthus distichus* Muell.-Arg.
Otanthera Blume. Melastomaceae (1). 10 Malaya, trop. Austr.
Othake Rafin. (*Gaillardia* BH.). Compositae (6). 6 S.W. U.S., Mexico.
Otherodendron Makino (*Elaeodendron* p.p.). Celastraceae. 1 Japan.
Othonna L. Compositae (8). 80 S. Afr. Xero. with swollen roots and often fleshy l.
Othonnopsis Jaub. et Spach (*Hertia* EP.). Compos. (8). 8 Afr., W. As.
Otiophora Zucc. Rubiaceae (II. 7). Madag., trop. Afr.
Otocalyx T. S. Brandege (inc. sed.). 1 Mexico.
Otochilus Lindl. Orchidaceae (II. 3). 4 Himalaya, Burma.
Otochlamys DC. Compositae (7). 1 Cape Colony.
Otomeria Benth. Rubiaceae (I. 2). 7 trop. Afr., Madag.
Otonephelium Radlk. (*Nephelium* p.p. BH.). Sapindac. (1). 1 Malabar.
Otopappus Benth. (*Zexmenia* p.p. EP.). Compositae (5). 6 C. Am.
Otopetalum Miq. Apocynaceae (I. 1). 1 Java.
Otopetalum F. C. Lehm. et Kränzl. Orchidaceae (II. 16). 1 Ecuador.
Otophora Blume. Sapindaceae (1). 12 trop. As.
Otoptera DC. (*Vigna* p.p. BH.). Leguminosae (III. 10). 1 S. Afr.
Otostegia Benth. Labiatae (VI). 10 W. As., Abyssinia.
Otoxalis Small (*Oxalis* p.p.). Oxalidaceae. 1 Guatemala.
Ottelia Pers. Hydrocharidaceae. 15 trop. and subtrop.
Otto of rose, *Rosa*.

Ottoa H. B. et K. Umbelliferae (III. 4). 1 Mexico.

Ottonia Spreng. = Piper L. p.p. (Pip.).

Ottoschulzia Urb. (*Poraqueiba* p.p.). Icacinaceae. 3 W.I.

Oubanguia Baill. Tiliaceae. 5 trop. Afr.

Oudemansia Miq. = Helicteres Pluk. (Stercul.).

Ougeinia Benth. Leguminosae (III. 7). 1 India.

Ouratea Aubl. (*Gomphia* BH.). Ochnaceae. 150 trop.

Ourisia Comm. ex Juss. Scrophulariaceae (III. 1). 20 Am., N.Z.

Ourouparia Aubl. (*Uncaria* Schreb.). Rubiaceae (I. 6). 30 trop., esp. As.

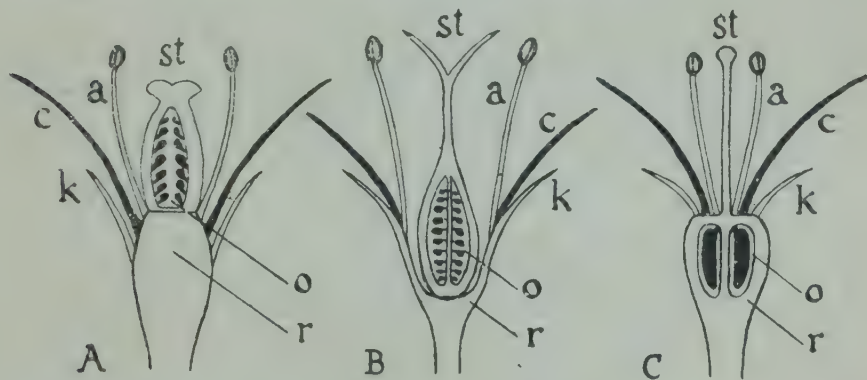
Outea Aubl. = Macrolobium Schreb. (Legum.).

Outfit for collecting, *cf.* Collecting.

Ouvirandra Thou. = Aponogeton Thunb. (Apon.).

Oval (l.), widish, tapering equally to base and tip.

Ovary, the hollow chamber formed by the infolded sporophylls, in which the ovules are borne on thickened *placentae* or cushions. It may be *superior* (on apex of torus above sta.) or *inferior* (sunk in torus below sta.) or intermediate, *apocarpous* (free cpls.) or *syncarpous* (united), in spirals or whorled, radial or $\cdot$ in symmetry. It may be *unilocular* (1-chambered), or *bi- tri- locular*, &c. (often simply called *multiloc.*). The imaginary joins of the cpls. are called the *sutures* (ventral if at the centre), and the midrib of the cpl. is called the dorsal suture. The placenta may bear one, two or more rows of ovules, or one or two ovules only. The partitions of the ovary are called the *septa*, and false septa, chambering it into more loc. than normal, are found in *Astragalus*, *Cruciferae*, *Gaylussacia*, *Linum*, &c.



DIAGRAMMATIC LONGITUDINAL SECTIONS OF FLOWERS, to show types of receptacle, ovary, stigma, &c. A, hypogynous flower with unilocular ovary, parietal placentation, and numerous ascending anatropous ovules with raphe downwards; stigma sessile, bilobed. B, perigynous flower with multi-locular ovary, axile placentation, and numerous horizontal anatropous ovules with raphe upwards; style with bifid stigma. C, epigynous flower with multi-locular ovary, apical placentation, and solitary pendulous anatropous ovules with ventral raphe; style long with capitate stigma. *r*, receptacle; *k*, calyx; *c*, corolla; *a*, stamens; *o*, ovary; *st*, stigma.

The style, if present, may be long or short, cylindrical, filiform, ribbed, &c.; it may be terminal, lateral, or basal. The stigma or stigmas may be sessile or on a style, simple (and then often capitate or head-like), lobed, -fid, radiate, &c.

The ovule may be sessile or stalked (on a *funicle*); erect, ascending,

horizontal, or pendulous. It may be *ortho-* or *atropous* (in a line with stalk, micropyle away from the latter), *anatropous* (reversed, and attached to stalk along side), *amphitropous* (stalk attached to middle of ovule), or *campylotropous* (ovule itself curved into U shape).

Ovate (l.), about twice as long as broad, tapering to the tip.

Overlook (W.I.), *Canavalia ensiformis* DC.

Ovidia Meissn. Thymelaeaceae. 4 Chili.

Ovieda L. = *Clerodendron* L. (Verben.).

Ovoid, solid oval.

Ovule, the possible future seed, *cf.* Ovary.

Ovuliferous scale, *cf.* *Coniferae*.

Ovum, the ♀ sexual cell, *Angiospermae*, *Pteridophyta*.

Owataria Matsumura. Guttiferae (v). 1 Formosa.

Owenia F. Muell. Meliaceae (III). 5 Austr.

Oxalidaceae (EP.; *Geraniaceae* p.p. BH.). Dicots. (Archichl. Geraniales). 7 gen., 250 sp., mostly trop. and subtrop. Most are perennial herbs with alt. often cpd. exstip. l. and large fls., usu. in cymes, ♂, reg. K 5, imbr., persistent; C 5, twisted or imbr., free or slightly united; A 10, obdiplost. (*i.e.* the outer whorl opp. to the petals, the inner to the sepals, and thus the cpls. opp. to the petals, instead of to the sepals, as in diplostemonous fls. with two whorls of sta. in proper alternation), united below, with introrse anthers; $\bar{G}$ (5), with free styles, 5-loc., with axile plac.; ovules in 1 or 2 rows in each loc., or few, anatr., with micropyle facing upwards and outwards. Capsule or berry; embryo straight, in fleshy endosp. *Chief genera*: *Oxalis*, *Biophytum*, *Averrhoa*. Closely allied to *Geraniaceae*. The chief difference is in the fruit.

Oxalis L. Oxalidaceae. 300 cosmop. chiefly S. Afr., Am. *O. Acetosella* L. (wood-sorrel) in Brit. is a small herb with monopodial rhiz. and ternate l., which sleep at night and in cold weather, the leaflets bending downwards. The fl. is protandr.; the stalk bends downwards and the fl. closes in dull or cold weather. Cleistogamic fls. (*cf.* *Viola*) occur. Loculic. caps. The seed has a fleshy aril springing from the base. When ripe the cells of the inner layers are extremely turgid, and a small disturbance causes the aril to turn inside out, as one might turn a glove-finger, from U to $\cap$. This is done instantaneously and the seed is shot off.

Many have bulbous or tuberous stems. Some, *e.g.* *O. bupleuriifolia* A. St Hil., have phyllodes in place of the ordinary l. (*cf.* *Acacia*). Fls. sol. or in cymose infls. Many exhibit trimorphic heterostyled fls. (see Darwin, *Forms of Fls.*); there are three stocks of pl., one bearing fls. with long styles, and mid- and short-length sta., the others with mid or short styles and correspondingly long and short or long and mid sta. (*cf.* *Lythrum*). Some produce axillary bulbils; others repr. veg. by underground offshoots. The tubers of *O. Deppei* Lodd. (S. Am., Mex.), and others, are used as food.

Oxandra A. Rich. (*Bocagea* p.p. BH.). Anonaceae (1). 7 trop. Am. Wood useful.

Oxera Labill. Verbenaceae (4). 15 New Caled.

Oxeye-daisy, *Chrysanthemum Leucanthemum* L.; **oxlip**, *Primula elatior* Hill.

Oxodium (Cl.), a humus marsh formation.

Oxyacantha Medic. = *Crataegus* Tourn. (BH.) = *Mespilus* L.

Oxyanthus DC. Rubiaceae (I. 8). 20 Afr.

Oxybaphus L'Hérit. (*Mirabilis* p.p. EP.). Nyctaginaceae. 20 W. Am., Himal.

Oxychloe Phil. (*Distichia* p.p.). Juncaceae. 1 Bolivia, N. Chili.

Oxycoccus Tourn. ex Adans. = *Vaccinium* L. *O. palustris* Pers. = V. *Oxycoccus*.

Oxydendrum DC. Ericaceae (II. 1). 1 E. U.S. (sorrel tree, sourwood).

Oxygonum Burch. Polygonaceae (II. 2). 10 trop. E. and S. Afr.

Oxygraphis Bunge. Ranunculaceae (3). 9 N. temp. As., Am.

Oxygyne Schlechter. Burmanniaceae. 1 trop. Afr.

✓ **Oxylobium** Andr. (*Callistachys* Vent.). Leguminosae (III. 2). 30 Austr.

Oxylobus Moç. ex DC. (*Ageratum* p.p.) Compositae (2). 3 Mexico.

Oxymeris DC. (*Leandra* p.p. EP.). Melastomaceae (1). 95 S. Am.

Oxymitra Hook. f. et Thoms. Anonaceae (4). 50 palaeotrop.

Oxyosmyles Spegazz. Boraginaceae (II). 1 Argentina.

Oxypappus Benth. Compositae (6). 2 Mexico.

Oxypetalum R. Br. Asclepiadaceae (II. 1). 90 Brazil, Mexico, W.I.

Oxyphyllum Phil. Compositae (12). 1 Chili.

Oxypolis Rafin. (*Peucedanum* p.p.). Umbelliferae (III. 6). 1 N. Am.

Oxypteryx Greene (*Asclepias* p.p.). Asclepiadaceae (II. 1). 1 N. Am.

Oxyrhynchus T. S. Brandegee. Leguminosae (III. 10). 1 Mexico.

Oxyria Hill. Polygonaceae (I. 2). 1 N. Arctic and subarctic (*O. digyna* Hill in Brit. alpine). Like *Rumex*, but dimerous, and with branching of the outer sta.

Oxys Tourn. ex Adans. = *Oxalis* L. (Oxal.).

Oxyspora DC. Melastomaceae (1). 8 Indomal.

Oxystelma R. Br. Asclepiadaceae (II. 1). 10 trop. and subtrop.

Oxystemon Planch. et Triana (*Clusia* p.p. BH.). Guttif. (v). 1 Colombia.

Oxystigma Harms (*Hardwickia* p.p.). Leguminosae (II. 2). 2 Cameroons.

Oxystylis Torr. et Frém. (*Wislizenia* p.p. EP.). Capparidaceae (v). 1 California.

Oxytenanthera Munro. Gramineae (13). 10 trop. As. and Afr.

Oxytenia Nutt. Compositae (5). 1 Colorado, California.

Oxytheca Nutt. Polygonaceae (I. 1). 6 California, Chili.

Oxythece Miq. (*Lucuma* p.p. BH.). Sapotaceae (1). 2 N. Brazil.

Oxytropis DC. Leguminosae (III. 6). 175 N. temp.; 2 in Brit.

Oyedaea DC. Compositae (5). 15 trop. Am.

Oyster plant, *Tragopogon porrifolius* L.

Ozomelis Rafin. (*Mitella* BH.). Saxifragaceae (1). 9 N. Am.

Ozothamnus R. Br. = *Helichrysum* Vaill. p.p. (Comp.).

Pachidendron Haw. = *Aloe* Tourn. p.p. (Lili.).

Pachira Aubl. (*Bombax* p.p. EP.). Bombacaceae. 4 trop. Am.

Pachistima Rafin. Celastraceae. 2 N. Am.

Pachites Lindl. Orchidaceae (II. 1). 2 S. Afr.

Pachyanthus Rich. Melastomaceae (1). 7 Colombia, Cuba.

Pachy- (Gr. pref.); thick; **-carpous**, with thick pericarp, &c.

Pachycarpus E. Mey. (*Gomphocarpus* R. Br. p.p.). Asclep. (II. 1). 20 S. Afr.

Pachycentria Blume. Melastomaceae (1). 12 Malay Archipelago.

- Pachycereus** Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 10 S.W. U.S., Mexico.
- Pachycladon** Hook. f. Cruciferae (4). 1 Mts. of New Zealand.
- Pachycornia** Hook. f. Chenopodiaceae (A). 1 Austr.
- Pachydiscus** Gilg et Schlechter. Caprifoliaceae. 1 New Caledonia.
- Pachyelasma** Harms (*Stachyothyrsus* Harms). Legum. (II. 7). 1 W. Afr.
- Pachygone** Miers. Menispermaceae. 12 Indomal.
- Pachylaena** D. Don ex Hook. et Arn. Compositae (12). 1 Chilian Andes.
- Pachylobus** G. Don (*Canarium* p.p. *BH.*). Burseraceae. 8 trop. Afr., W.I. Some have ed. fr.
- Pachyloma** DC. (*Comolia* DC., *Urodesmium* Naud.). Melast. (1). 2 Braz.
- Pachylophus** Spach (*Oenothera* p.p. *BH.*). Onagraceae (2). 12 W. U.S.
- Pachynema** R. Br. ex DC. Dilleniaceae. 3 N. Austr.
- Pachynocarpus** Hook. f. Dipterocarpaceae. 4 Malaya.
- Pachyphyllum** H. B. et K. Orchidaceae (II. 20). 6 Andes.
- Pachyphytum** Link, Klotzsch et Otto (*Cotyledon* p.p. *BH.*). Crassulaceae. 7 Mexico.
- Pachyplectron** Schlechter. Orchidaceae (II. 2). 2 New Caledonia.
- Pachypodanthium** Engl. et Diels (*Uvaria* p.p.). Anon. (1). 2 W. Afr.
- Pachypodium** Lindl. Apocynaceae (II. 1). 5 S. Afr., Madag. Cf. *Ann. of Bot.*, 1912, p. 929.
- Pachypterygium** Bunge. Cruciferae (2). 5 W. C. As.
- Pachyrhizus** Rich. Leguminosae (III. 10). 2 trop. Am., As., cult. for the ed. tuberous root (yam-bean).
- Pachyrhynchus** DC. Compositae (4). 1 S. Afr.
- Pachysandra** Michx. Buxaceae. 2 Japan, Alleghanies (cf. *Epigaea*).
- Pachystachys** Nees (*Jacobinia* p.p. *BH.*). Acanth. (IV. B). 6 trop. Am.
- Pachystela** Pierre (*Sideroxylon* p.p.). Sapotaceae (1). 3 trop. Afr.
- Pachystemon** Blume (*Macaranga* *BH.*). Euphorbiaceae (A. II. 2). 6 Indomal.
- Pachystigma** Hochst. (*Fadogia* *BH.*). Rubiaceae (II. 1). 15 trop. Afr.
- Pachystoma** Blume. Orchidaceae (II. 9). 8 Indomal.
- Pachystoma** Reichb. f. (*Ancistrochilus* Rolfe). Orchidaceae (II. 9). 1 trop. Afr.
- Pachystroma** (Klotzsch) Muell.-Arg. Euphorbiaceae (A. II. 4). 1 Brazil. Cult. for variable leaf form.
- Pachystylus** K. Schum. Rubiaceae (II. 4). 1 New Guinea.
- Pachytrophe** Bur. Moraceae (1). 2 Madag.
- Pacouria** Aubl. = *Landolphia* Beauv. (Apocyn.).
- Pacourina** Aubl. Compositae (1). 1 S. Am. Ed. 1.
- Padauk**, *Pterocarpus macrocarpus* Kurz.
- Paddy**, *Oryza sativa* L.
- Padus** L. = *Prunus* Tourn. p.p. (Ros.).
- Paederia** L. Rubiaceae (II. 6). 20 trop.
- Paederota** L. (*Veronica* p.p.). Scrophulariaceae (III. 1). 5 |*.
- Paeonia** (Tourn.) L. Ranunculaceae (1). 15 Eur., As., west N. Am. *P. officinalis* L. is the paeony, noteworthy for its tuberous roots, large fls. with great secretion of honey, slight cohesion of cpls., and follicle with red seeds. The protog. fls. close at night.

Paeony, *Paeonia*.

Paepalanthus Mart. Eriocaulaceae. 215 S. Am.

Paesia St Hil. Polypodiaceae. 7 trop. Am., E. As., N.Z.

Pagaea Griseb. in DC. Gentianaceae (1). 6 Guiana, N. Brazil.

Pagamea Aubl. Rubiaceae (II. 5) (Logan. *BH.*). 8 Brazil, Guiana.

Pagerea Pierre. Inc. sed. 1 Cochinchina.

Pagetia F. Muell. Rutaceae (1). 1 Queensland.

Pahudia Miq. Leguminosae (II. 3). 3 Malay Archip. Good timber.

Paigle, cowslip, *Primula veris* Lehm.

Paina de seda, *Chorisia speciosa* St. Hil.

Paint brush, -ed cup, -ed lady, *Castilleja*; -root, *Lachnanthes*.

Paivaea Berg. Myrtaceae (1). 1 São Paulo.

Paivaeusa Welw. Euphorbiaceae (A. I. 1) (Burser. *BH.*). 1 W. Afr.

Pajanelia DC. Bignoniaceae (2). 1 Indomal.

Palaeartic, old world arctic; -obotany, fossil botany; -o-tropical, old world tropical.

Palafoxia Lag. Compositae (6). 7 E. and S.E. U.S.

Palaquium Blanco (*Dichopsis* Thw.). Sapotaceae (1). 65 Indomal.

P. Gutta Burck was formerly the chief source of gutta-percha, but it is now extinct exc. in cult., and gutta is obtained from other sp. and from *Payena Leerii*, &c. The trees are cut down or ringed and the milky latex coagulates, forming gutta percha (cf. Rubber).

Palas, *Butea frondosa* Roxb.

Palava Juss. (*Palaua* Cav.). Malvaceae (1). 5 Chili, Peru.

Pale, **palea**, **palet**, cf. *Gramineae*.

Palenia Phil. (*Heterothalamus* p.p. *EP.*). Compositae (3). 1 Chili.

Paliavana Vell. ex Vand. Gesneriaceae (II). 2 Brazil.

Palicourea Aubl. Rubiaceae (II. 5). 120 trop. Am., W.I.

Palimbia Bess. (*Peucedanum* p.p. *BH.*). Umbellif. (III. 6). 1 Russia.

Palisander, wood of Brazilian sp. of *Dalbergia*, *Jacaranda*, *Machaerium*, &c.

Palisota Reichb. Commelinaceae. 8 trop. W. Afr. Cult. orn. fl.

Palissya Baill. (*Alchornea* p.p. *BH.*). Euphorb. (A. II. 2). 1 Madag.

Paliurus Tourn. ex Mill. Rhamnaceae. 2, one, *P. aculeatus* Lam.

(Christ's thorn, cf. *Zizyphus*), S. Eur. to China; one China, Japan. The former has stipular thorns, one straight, the other recurved; the latter has both thorns straight. The fr. has a horizontal wing, developed at the base of the style after fert.

Pallasia Klotzsch. Rubiaceae (I. 3). 1 Guiana.

Pallenis Cass. Compositae (4). 1 Medit.

✓ **Pallens** (Lat.), pale coloured.

Palm, one of the *Palmae*; **Assai** -, *Euterpe*; **betelnut** -, *Areca*; **cabbage** -, *Oreodoxa*; -cabbage, *Cocos*, &c.; **carnauba** -, *Copernicia*; **coconut** -, *Cocos nucifera* L.; **cohune** -, *Attalea*; **coquito** -, *Jubaea*; **date** -, *Phoenix dactylifera* L.; **doum** -, *Hyphaene*; **gomuti** -, *Arenga*; -honey, *Jubaea*; **ivory** -, *Phytelephas*; **macaw** -, *Acrocomia*; **oil** -, *Elaeis*; **palmetto** -, *Sabal*; **Palmirah** or **Palmyra** -, *Borassus*; **paxiuba** -, *Iriarteia*; **peach** -, *Bactris*; **piassaba** -, *Attalea*, *Leopoldinia*; **royal** -, *Oreodoxa*; **sago** -, *Metroxylon*; -sugar, *Arenga*, *Borassus*, *Cocos*, *Caryota*, &c.; **thatch** -, *Sabal*, *Thrinax*, &c.; **toddy** -, *Caryota*; **wax** -, *Ceroxylon*, *Copernicia*; **wine** -, *Raphia*.

Palmae (*EP.*, *BH.*). Monocots. (Principes; Calycinae *BH.*). 130 gen., 1200 sp. trop. and subtrop.; most of the gen. well localised in the various floral regions, the chief exceptions being *Cocos nucifera*, *Elaeis guineensis* and *Raphia vinifera*. The palms form a char. feature of trop. veg. The veg. habit is familiar—a crown of l. at the end of an unbranched stem (*Hyphaene* is branched). The stem exhibits various forms; some palms, e.g. *Nipa*, *Phytelephas*, have a short rhiz. or stock bearing ‘radical’ leaves and often branching below ground; some, e.g. *Geonoma*, *Calamus*, *Desmoncus*, have a thin reed-like stem with long internodes (the two latter are climbers); others again have a tall stem with a crown of l. at the top. The stem is often covered with the remains of old leaf-sheaths, or is thorny. Its height may reach 150 feet in some, and it grows slowly in thickness. At the base the stem is usu. conically thickened or provided with buttress roots; this gives the necessary mechanical rigidity. The stems of *Cocos* and other palms are curved instead of straight; this appears to be due to reaction to light.

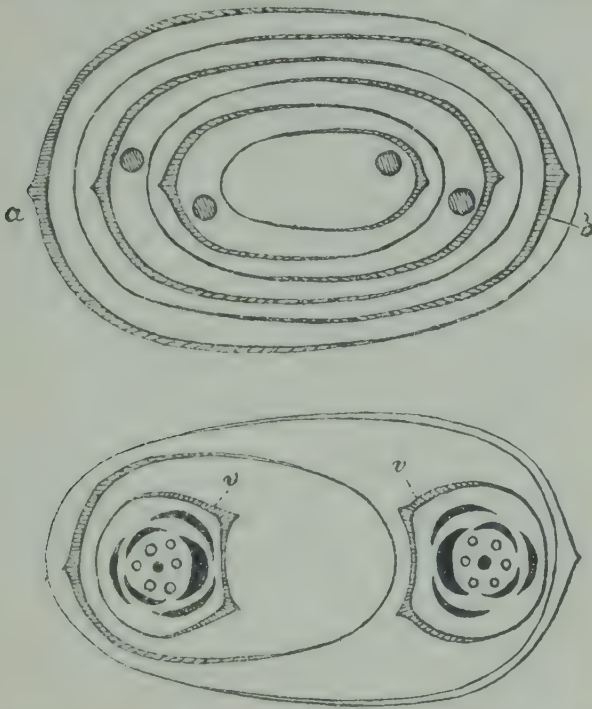
The l. is very characteristic; the only closely similar l. is that of *Carludovica*, though those of Cycads and some tree ferns have a superficial likeness. Some have palmate (fan) l., some pinnate (feather) l., but this structure arises by a development unlike that which gives rise to these forms in Dicots. and more like that in *Araceae*. The l. is usu. very large, and at the base of the petiole is a sheath, which makes a firmer attachment to the stem than a mere articulation. The sheath contains many bundles of fibres, which remain after the decay of the softer tissues. The pinnae are folded where they meet the main stalk of the l., sometimes upwards (*induplicate*, V in section), sometimes downwards (*reduplicate*, Λ in section); these chars. are important in classification. The l. emerges from the bud in an almost vertical line and thus escapes excessive radiation and transpiration. The palms are pronounced sun-plants, and show xero. chars. in their l. The leaf-surface is glossy with a thick cuticle, and is rarely arranged ⊥ to the incident rays. Often the l. is corrugated, or placed at an angle by the twisting or upward slope of the stalk; sometimes the leaflets slope upwards, and so on.

Infl. usu. very large and much branched. In *Corypha* and others it is term., its production being a mark of the end of the life of the plant (*cf.* *Agave*), but usu. it is axillary; sometimes in the axils of the current l., sometimes lower on the stem. The branching is racemose and the fls. are often embedded in the axis; the whole is often termed a *spadix*. It is enclosed in a spathe of several l. and emerges when the fls. are ready to open. Some are diœc., some monœc., in the latter case often with the fls. in groups (small dichasia) of 3, one ? between two ♂.

The fl. has usu. the formula $P\ 3+3, A\ 3+3, \underline{G}\ 3$ or (3) . P homochlam., varying in texture. G (3) 1-loc. or 3-loc., with 3 or sometimes 1, anat. ovules (rarely semi-anatr., or orthotr.). Some are wind-pollinated, others are entomoph.

Fr. a berry or drupe; in the latter case the endocarp usu. united to the seed. Fr. in § III covered with dry woody scales. Endosperm large; in date, vegetable ivory, &c., it is very hard, the non-nitro-

genous storage-material taking the form of cellulose, deposited upon the cell walls. In germ. the cot. lengthens and pushes out the radicle, and then the plumule grows out of the sheathing cotyledon.



Diagrams of *Raphia* (after Eichler). Above, the arrangement of the last branches of infl. *a*, *b*, two of the sterile sheathing bracts, above them bracts with branches in their axils, a little out of the median line. Below, arrangement of the flowers on branches of upper figure: bracts 2-ranked; each fl. has a 2-keeled bracteole *v*.

Economically, the *P.* are very important, furnishing many of the necessities of life in the tropics, &c. Many have ed. fr. or seed, *e.g.* date (*Phoenix*) and coco-nut (*Cocos*); the stems contain much starch as reserve food, esp. in those sp. which save up for a great terminal infl., *e.g.* *Metroxylon* (sago), *Caryota*, &c.; the rush of sap to the infl., esp. in the cases just mentioned, is great; and by tapping the stem great quantities of sugar-containing fluid may be obtained and utilised, either directly as a source of sugar or indirectly to make intoxicating drinks by fermentation. The bud of l. at the top of the stem is sometimes used as cabbage, but of course its removal kills the tree. The stems are used in building, but do not yield plank-timber; the l. in thatching and basket-making, and for hats, mats, &c.; the fibres of the leaf-sheaths or sometimes of the pericarp (*e.g.* *Cocos*) are used for ropes, &c.; other *P.* furnish oil from the seed (*e.g.* *Elaeis*, *Cocos*), wax (*Copernicia*), vegetable ivory (*Phytelephas*, &c.), betel-nuts (*Areca*), &c. [Cf. Baillon, *Hist. des Pl.* XIII. 283.]

Classification and chief genera (after Drude):

A. Perianth 6-partite, enclosing the fruit after fertilisation.

I. *CORYPHOIDEAE* (spadix loosely branched, often a prolix panicle; fls. single or in long rows flowering from above;

- cpls. 3, or loosely united, separating after fert.; berry; fan or feather l., induplicate):
1. *Phoenixaceae* (feather l.): Phoenix.
 2. *Sabaleae* (fan l.): Chamaerops, Rhaps, Corypha, Livistona, Sabal, Copernicia.
- II. *BORASSOIDEAE* (spadix simple or little branched with thick cylindrical twigs; fls. markedly diclinous dimorphic, invested with bracts, the ♂ in 1—∞ cincinni in grooves of the twigs; cpls. (3), fully united, producing a one-seeded drupe; fan l., induplicate):
1. *Borasseae*: Hyphaene, Borassus, Lodoicea.
- III. *LEPIDOCARYOIDEAE* (spadix branched once or more in a 2-ranked arrangement; fls. in cincinni or 2-ranked spikes with bracts and bracteoles round them; cpls. (3), fast united, covered with scales; fr. 1-seeded, covered with hard scales; feather or fan l., reduplicate):
1. *Mauritiaceae* (fan l.): Mauritia.
 2. *Metroxyleae* (feather l.): Raphia, Metroxylon, Calamus.
- IV. *CEROXYLOIDEAE* (spadix simple or one or several times branched; fls. diclinous, usu. dimorphic; when dioec. sol. with rudimentary bracts, when monoec. usu. in cymes of 3 fls., 2 being ♂ and 1 ♀, or rarely ∞ ♂ and 1 at the end of the row being ♀; cpls. (3), 3- 2- 1-loc.; fruit smooth, not scaly; feather l.):
1. *Areceae* (berry fr.): Caryota, Arenga, Leopoldinia, Iriarte, Ceroxylon, Chamaedorea, Oreodoxa, Euterpe, Kentia, Areca.
 2. *Cocoeae* (drupe fr.): Elaeis, Attalea, Cocos, Bactris, Desmoncus.
- B. Perianth rudimentary in ♂ or ♀. Fruit in dense heads.
- V. *PHYTELEPHANTOIDEAE* (♂ fl. with ∞ free sta.; ♀ with P; endosp. ivory-like): Phytelphas (only gen.).
- VI. *NIPOIDEAE* (♂ with (3) sta.; ♀ naked; woody endocarp): Nipa (only gen.).

For further details of P. see *Nat. Pfl.*, Seemann's *History of the Palms*, and *Treas. of Bot.*

Palmate, divided, and arranged like the leaves of a fan.

Palmatifid, **-partite**, **-sect**, palmately divided to $\frac{1}{4}$ — $\frac{1}{2}$, $\frac{1}{2}$ — $\frac{3}{4}$, over $\frac{3}{4}$ of the depth.

Palmerella A. Gray. Campanulaceae (111). 2 Mexico, California.

Palmeria F. Muell. Monimiaceae. 7 Austr., New Guinea, Celebes.

Palmetto, *Sabal*, *Thrinax*; **small -**, *Carludovica*.

Palmiet, *Pronium Palmita* E. Mey.

Palmirah, *Palmyra palm*, *Borassus flabellifer* L.

Palmiste, *Oreodoxa*.

Palmorchis Barb. Rodr. (*Sobralia* p.p. *EP.*). Orchid. (11. 7). 2 Brazil.

Palmstruckia Sond. Cruciferae (1). 1 S. Afr.

Palovea Aubl. Leguminosae (11. 3). 1 French Guiana.

Palta, avocado, *Persea gratissima* Gaertn. f.

Paltonium Presl. Polypodiaceae. 2 trop. Am., China.

Paludose, **palustris** (Lat.), of marshes.

- Palumbina** Reichb. f. (*Oncidium* p.p. *BH.*). Orchid. (II. 19). 1 Guatem.
- Pamburus** Swingle. Rutaceae (v.). 1 India.
- Pampas**, the grassy plains of S. temp. Am.; - **grass**, *Cortaderia argentea* Stapf.
- Pampelmousse**, shaddock, *Citrus decumana* Murr.
- Pamphalea** DC. Compositae (12). 5 temp. S. Am.
- Pamphilia** Mart. Styracaceae. 3 Brazil.
- Panama hats**, *Carludovica*; - **rubber**, *Castilloa elastica* Cerv., &c.
- Panargyrus** Lag. = *Nassauvia* Juss. p.p. (Comp.).
- Panax** Linn. (*BH.* incl. *Cheirodendron* Nutt., *Nothopanax* Seem.). Araliaceae (2). 6 trop. and E. As., N. Am. For ginseng see *Aralia*.
- Pancheria** Brongn. et Gris. Cunoniaceae. 10 New Caled.
- Pancovia** Willd. (*Erioglossum* *BH.*). Sapindaceae (1). 3 trop. W. Afr.
- Pancratium** Dill. ex L. Amaryllidaceae (1). 12 Medit., trop. As.
- Panda** Pierre. Pandaceae. 1 trop. W. Afr. Fl. cyclic, dioec., hetero-chlam. $\underline{G}$ (3), each with one pend. orthotr. ov. Drupe with 3 one-seeded chambers.
- Pandaceae** (*EP.*). Dicots. (Archichl. Pandales). Only gen. *Panda*, *q.v.*
- Pandales**. The 22nd. order of Dicots. Archichl. Only fam. Pandaceae.
- Pandanaceae** (*EP.*, *BH.*). Monocots. (Pandanales; Nudiflorae *BH.*). 3 gen., 225 sp., char. pl. of the Old World tropics, but a few warm temp. Mostly sea-coast or marsh pl. with tall stems supported upon aerial roots, frequently branched; buds are found in all axils, and the branching appears dichotomous; some are climbers. The aerial roots have marked root-caps of membranous texture. L. in 3-ranked phyllotaxy, but stem usu. twisted so that they appear to run in well-marked spirals, whence the name of screw-pines. L. parallel-veined, long, and narrow, with open sheath and usu. thorny margin; generally sharply bent downwards at the middle, and corrugated like a palm l. Infl. term., with a few bract-like l. at the base going gradually over into the foliage l., usu. a racemose spadix with neither bracts nor bracteoles to the individual fls., which are somewhat difficult to make out. The σ fls. in sp. of *Freycinetia* have a rudimentary G, but in the rest of the fam. they have not. The floral axis of the σ fl. bears a number of sta., arranged in a raceme or umbel-like manner upon it. The G in the φ fl. of ∞ cpls. in a ring, 1-loc. or ∞ -loc., the union being $\pm$ complete, or it may be reduced, even to 1 cpl., or to a row of cpls. arranged transv. Stigmas sessile. Ovules anatr. Berry or multi-loc. drupe, often containing hollow spaces which aid it in swimming. Seed with oily endosp. The plants yield thatch, &c. *Genera*: *Saranga* (infl. paniculate; fls. pedicelled; drupe), *Freycinetia* (infl. capitulate or spicate; fls. sessile; berry), *Pandanus* (infl. as last; fls. sessile; drupe).
- Pandanales**. The 1st order of Monocots.
- Pandaneae** (*BH.*) = Pandanaceae.
- Pandanophyllum** Hassk. = *Mapania* Aubl. p.p. (Cyper.).
- Pandanus** Rumph. ex L. f. Pandanaceae. 150 palaeotrop. (screw-pines). Trees with flying-buttress roots. Fls. in large heads, enclosed in spathes. σ of ∞ sta., arranged in various ways upon the axis, φ of 1— ∞ cpls., free or united. Each gives a drupe containing as many

seeds as cpls. Seeds album. The pericarp is rich in fibres. The fr. of some are cooked and eaten, *e.g.* *P. leram* Jones, the Nicobar bread-fruit. The l. of many are used for weaving, *e.g.* *P. tectorius* Sol., which is cult. in Java. Several have sweetly scented fls. or l. which are used for ornament and otherwise in the East.

Panderia Fisch. et Mey. Chenopodiaceae (A). 1 Syria, Persia.

Pandiaka Moq., Benth. et Hook. f. (*Achyranthes* p.p. *EP.*). Amaran-
taceae (2). 10 trop. Afr.

Pandorea Spach (*Tecoma* p.p. *BH.*). Bignoniaceae (2). 6 E. Indo-
mal.

Pandurate, fiddle-shaped.

Paneion Lunell (*Poa* p.p.). Gramineae (10). 12 N. Am.

Pangium Reinw. Flacourtiaceae (3). 2 Malay Archip. The seeds of
P. edule Reinw. are eaten after long soaking to dissipate the hydro-
cyanic acid which they, like all parts, contain (Treub in *Ann. Buit.*
XIII. 1).

Panic grass (Am.), *Panicum*.

Panicle, a compound raceme, *Avena*.

Panicularia Fabr. (*Glyceria* p.p.). Gramineae (10). 20 Am.

Panicum L. Gramineae (5). 400 trop. and warm temp. The spikelets
are 1- or 2-flowered. Many *P.*, known as millets, are important cereals,
extensively cult. in India, S. Eur., &c., *e.g.* *P. miliaceum* L., the
common millet, *P. miliare* Lamk., the little millet, and other minor
sp. Many are important fodder plants, *e.g.* *P. maximum* Jacq. (trop.;
Guinea grass), *P. molle* Sw. (trop. Am.; Mauritius grass), *P. Crus-*
galli L. (Am., nat. in Brit.; the barnyard grass of the U.S.), *P. san-*
guinale L. and others (crab or panic grasses of U.S.). Many are dis-
tributed by animals, for the joints of the stem will grow after passing
the alimentary canal.

Panisea Lindl. Orchidaceae (11. 16). 2 Himalaya, Khasias.

Pannosus (Lat.), felt-like.

Panopsis Salisb. Proteaceae (11). 8 trop. Am.

Pansy, *Viola tricolor* L., &c.

Pantacantha Spegazz. Solanaceae (4). 1 Patagonia.

Pantathera Phil. Gramineae (10). 1 Juan Fernandez.

Pantlingia Prain (*Stigmatodactylus* p.p. *EP.*). Orchid. (11. 2). 1
Himal.

Panurea Spruce ex B. et H. f. Leguminosae (111. 1). 1 N. Brazil.

Papain, papaw, *Carica Papaya* L.

Papaver Tourn. ex L. Papaveraceae (11). 90 Eur., As., Am., S. Afr.,
Austr. *P. Rhoeas* L. and 3 others (poppy) in Brit. The fls. nod in
bud, not by their own weight, but by more rapid growth of one side
of the stalk. Ovary crowned by a sessile rayed stigma, each lobe of
which stands over a placenta instead of as usual over a midrib. This
is commonly explained by supposing each actual ray of the stigma to
be formed of one half of each of two adjacent stigmas. The fl. of most
contains no honey, and is homogamous; both cross- and self-pollina-
tion usually occur with insect visits. Fr. a round caps., opening by
pores under the eaves of the roof formed by the dry stigmas, so that
the seeds are protected from rain and can only escape when the capsule
is shaken by strong winds or other agencies (censer mechanism, cf.

Aconitum). *P. somniferum* L. is the opium poppy; the drug is obtained by cutting notches in the half ripened capsules, from which the latex exudes and hardens. The seeds of this and other sp. yield an oil on pressure.

Papaveraceae (EP., BH.). Dicots. (Archichl. Rhoeadales; Parietales BH.). 28 gen., 600 sp., chiefly N. temp. Most are herbs with alt. l., and §§ I. and II. contain latex. *Corydalis* and *Fumaria* are climbers, *Bocconia* a shrub. Fls. sol. or in racemes, or in dichasia with cincinnal tendency, reg. or irreg., ♀, hypog. (exc. *Eschscholtzia*). K 2 (united in *Eschscholtzia*), caducous; C 2+2, rolled or crumpled in bud (see *Hypecoum*); A 4 or ∞ or 2 (see sub-fams.); in the last case each sta. branches into 3 parts (see fig.), the centre one bearing an entire anther, the lat. ones each half an anther; G (2—∞), 1-loc. with parietal plac., which in *Papaver*, &c. project into the loc.



Floral diagram of *Corydalis cava* (after Eichler).

Ovules generally ∞, anatr. or slightly campylotr. Fr. a septic. caps., or one opening by pores, or a nut; seeds with oily endosp., and small embryo. The fls. are mostly large and conspicuous, but many contain no honey and are visited by pollen-seeking insects; they are often protandr. Those of sub-fam. III. are irreg., and adapted to bees in a way somewhat like that found in Leguminosae. The order is of little economic value; see *Papaver*.

Classification and chief genera:

- I. **HYPECOIDEAE** (petals without spur; sta. 4; cpls. 2):
Hypecoum.
- II. **PAPAVEROIDEAE** (as I., but sta. ∞; cpls. 2—∞):
Eschscholtzia, *Chelidonium*, *Glaucium*, *Papaver*.
- III. **FUMARIOIDEAE** (petals with spur; sta. 2, each branched into 3): *Dicentra*, *Corydalis*, *Fumaria*.

Many authors split off III. as a separate fam., *Fumariaceae*.

Papaya Tourn. ex L. = *Carica* L. (Caric.).

Papayaceae = *Caricaceae*.

Paper is made from fine fibre that is entirely (or almost) composed of cellulose. The best is made of cotton and linen rags; and cf. *Bamboo*, *Borassus*, *Broussonetia*, *Fatsia*, *Hedychium*, *Lepidosperma*, *Stipa*, *Streblus*, *Zea*, &c. *Adansonia*, *Coniferae* (the wood, pulped), *Corchorus*, *Crotalaria*, *Musa* (*textilis*), straw, &c. are also used.

Paphia Seem. (*Agapetes* BH.). Ericaceae (III. 2). 1 Fiji. Cult. orn.

Paphinia Lindl. (*Lycaste* p.p. BH.). Orchidaceae (II. 12). 2 Guiana.

Paphiopedilum Pfitz. (*Cypripedium* p.p.). Orchidaceae (I. 2). 50 trop. As., Am.

Papilionanthe Schlechter (*Vanda* p.p.). Orchidaceae (II. 20). 1 Indomal.

Papilionatae, a subfamily of Leguminosae.

- Papilioopsis** E. Morr. ex Cogn. et Marchal (*Oncidium* p.p.). Orchidaceae (II. 19). 1 S. Am.
- Pappea** Eckl. et Zeyh. Sapindaceae (I). 4 trop. and S. Afr. *P. capensis* E. et Z. is the 'wilde preume' of S. Afr., with ed. fr.; oil is obtained from the seeds, and the timber is useful.
- Pappea** Sond. et Harv. (*Choritaenia* Benth.). Umbell. (III. 6). 1 S. Afr.
- Papperitzia** Reichb. f. Orchidaceae (II. 19). 1 Mexico.
- Pappophorum** Schreb. Gramineae (10). 20 trop. and subtrop.
- Pappostyles** Pierre. Styracaceae. 1 trop. Afr.
- Pappothrix** A. Gray, Rydberg (*Laphamia* p.p.). Comp. (6). 3 S.W. U.S.
- Pappus**, the tuft of hairs, bristles, &c., repres. K, *Compos.*, *Valer.*
- Papualthia** Diels (*Goniothalamus* p.p.). Anonaceae (2). 8 New Guinea.
- Papyrus** Willd. = *Cyperus* Mich. *P. antiquorum* Willd. = *C. Papyrus*.
- Para-** (Gr. pref.), beside.
- Para rubber**, *Hevea brasiliensis* Muell.-Arg., &c.
- Parabaena** Miers. Menispermaceae. 10 Indomal.
- Parabarium** Pierre (*Echites* p.p.). Apocynaceae (II. 1). 10 Cochinchina.
- Parabarleria** Baill. (*Barleria* p.p.). Acanth. (IV. A). 1 E. trop. Afr.
- Parabignonia** Bur. (*Tecoma* p.p.). Bignoniaceae (2). 1 Bahia.
- Paraboea** C. B. Clarke (*Didymocarpus* p.p.). Gesner. (1). 15 Malaya.
- Parabouchetia** Baill. Solanaceae (4). 1 Brazil.
- Paracaryum** Boiss. Boraginaceae (IV. 1). 35 Medit., C. As.
- Paracelsia** Zoll. Euphorbiaceae (B. 11). 1 Malay Archipelago.
- Paracephaelis** Baill. Rubiaceae (I. 6). 1 Madagascar.
- Parachute mechanism**, cf. Dispersal.
- Paracolea** Baill. Bignoniaceae (4). 1 Madagascar.
- Paracorolla**, appendage of a corolla, corona.
- Paracroton** Miq. Euphorbiaceae (A. II. 5). 1 W. Java.
- Paradaniella** Rolfe. Leguminosae (II. 3). 1 trop. Afr.
- Paradisanthus** Reichb. f. Orchidaceae (II. 13). 1 Bahia.
- Paradise, grains of**, *Amomum Melegueta* Roscoe.
- Paradisiasia** Mazzuc. Liliaceae (III). 1 Mts. of Eur.
- Paradolichandra** Hassler. Bignoniaceae (2). 1 Paraguay.
- Paradombeya** Stapf. Bombacaceae. 2 E. As.
- Paragenipa** Baill. Rubiaceae (inc. sed.). 1 trop. Afr.
- Paragonia** Bur. (*Bignonia* p.p. *BH.*). Bignoniaceae (1). 1 S. Brazil.
- Paragophytum** K. Schum. Rubiaceae (II. 1). 1 Cameroons.
- Paraguay tea**, *Ilex paraguensis* A. St Hil.
- Parajaeschkea** Burkill. Gentianaceae (1). 1 Sikkim.
- Paralamium** Dunn. Labiatae (VI). 1 Yunnan.
- Parallel descent**, that which results in similar structure, though the plants be not descended from an immediate common ancestor, e.g. 1. of *Selaginella* and mosses.
- Paralstonia** Baill. Apocynaceae (I. 3). 1 Phil. Is.
- Paralyxia** Baill. Apocynaceae (I. 3). 1 Guiana.
- Paramansoa** Baill. Bignoniaceae (1). 1 Venezuela.
- Parameria** Benth. Apocynaceae (II. 1). 5 Malaya. Some yield rubber.
- Paramignya** Wight. Rutaceae (V). 6 Indomal.

- Paramo**, the alpine region of the N. Andes; *Espeletia*.
- Paranephelium** Miq. Sapindaceae (1). 2 Further India, Sumatra.
- Paranomus** Salisb. (*Nivenia* p.p. *BH.*). Proteaceae (1. 2). 12 S. Afr.
- Paraphlomis** Prain (*Phlomis* p.p.). Labiatae (VI). 3 E. Indomal.
- Parapodium** E. Mey. Asclepiadaceae (II. 1). 3 S. Afr.
- Parartocarpus** Baill. Moraceae (II). 5 Malaya.
- Parascopolia** Baill. Solanaceae (inc. sed.). 1 Mexico.
- Parashorea** Kurz (*Shorea* p.p. *BH.*). Dipterocarpaceae. 2 S.E. As.
- Parasia** Rafin. (*Belmontia* p.p.). Gentian. (1). 6 trop. and S. Afr.
- Parasites**, pl. which draw all (*total*), or some (*partial*), of their food from other pl. (*hosts*) by special organs termed *suckers* or *haustoria*. Total p. have not green tissue, partials have, as they draw only unelaborated food. Total: *Balanophoraceae*, *Cassytha*, *Cuscuta*, *Hydnoraceae*, *Lathraea*, *Lennoaceae*, *Orobanche*, *Rafflesiaceae*; partial: *Loranthaceae*, *Myzodendraceae*, *Santalaceae*, *Scrophulariaceae* (Rhinanthus group, § III. 2 and 3). Cf. Schimper, *Plant Geography*, or Hemsley in *Linn. Soc. Journ.* XXXI.
- Parasol pine**, *Sciadopitys verticillata* Sieb. et Zucc.
- Paraspalathus** Presl = *Aspalathus* L. (Legum.).
- Parasponia** Miq. Ulmaceae. 2 Java, Polynesia.
- Parastemon** A. DC. Rosaceae (VI). 1 Malay Peninsula, Sumatra.
- Parastichy**, a secondary spiral in phyllotaxy.
- Parastranthus** G. Don = *Lobelia* L. (Campan.).
- Parastrephia** Nutt. Compositae (3). 1 Peru.
- Parasystasia** Baill. (*Barleria* p.p.). Acanthaceae (IV. B). 1 Somali.
- Paratephrosia** Domin. Leguminosae (III. 6). 1 C. Austr.
- Paratheria** Griseb. (*Chamaeraphis* *EP.*). Gramineae (5). 1 W.I.
- Parathesis** Hook. f. Myrsinaceae (II). 20 Cuba, C. Am.
- Paratrophis** Blume. Moraceae (1). 7 N.Z., Polynesia.
- Paratropia** DC. = *Heptapleurum* Gaertn. (*BH.*) = *Schefflera* Forst.
- Paravallaris** Pierre. Apocynaceae (II. 2). 1 Cochinchina.
- Pardalopetalum** Hallier = *Paphiopedilum* Pfitz. p.p. (Orchid.).
- Pareira brava**, *Chondodendron tomentosum* Ruiz et Pav.; -, false, *Cissampelos Pareira* L.; - root, white, *Abuta rufescens* Aubl.
- Parentucellia** Viv. (*Bartsia* p.p. *BH.*). Scrophular. (III. 3). 2 W. Medit.
- Pareugenia** Turrill. Myrtaceae (1). 1 Fiji.
- Pariana** Aubl. Gramineae (12). 10 trop. S. Am.
- Parietal** (plac.), on the walls of a 1-loc. ovary; cf. diagram of *Gesneriaceae*, *Orchidaceae*, &c.
- Parietales**. The 27th order (*EP.*) of Archichlamydeae. The 2nd cohort (*BH.*) of Polypetalae.
- Parietaria** (Tourn.) L. Urticaceae. 7 temp. and trop. (*P. officinalis* L., pellitory, in Brit.). Fls. mostly ♂ (unlike most of the fam.), in little cymes in the l. axils. According to Eichler the first fl. is ♀, the bulk of the cyme ♂, and the last fls. ♂. The ♂ fls. are exceedingly protog., the style protruding from the bud; the sta. develop later, exploding when ripe like those of the nettle, but by this time the stigma is incapable of fert., and usu. the style has dropped off, so that at first glance the fl. looks as if ♂.
- Parinarium** Aubl. Rosaceae (VI). 45 trop. Some have ed. seed.

Paripon Voigt. *Palmae* (inc. sed.). 1, habitat?

Paris (Rupp.) L. *Liliaceae* (VII). 12 N. palaeotemp. *P. quadrifolia* L. (herb-Paris) in Brit. Monopodial rhiz. and aerial stem with whorl of 4 or more net-veined l.; the aerial stems are formed, not annually, but at irreg. periods. P. 4- (or more) merous, as well as the other whorls; in herb-Paris the sepals alt. with the foliage-l. The fls. of this sp. are very protog., and colour and scent attract flies.

Parishella A. Gray. *Campanulaceae* (II). 1 California.

Parishia Hook. f. *Anacardiaceae* (3). 4 Burma, Malay Peninsula.

Paripinnate, pinnate with an even number of leaflets.

Paritium A. Juss. = *Hibiscus* L. (Malv.).

Park-land, savannah, open grassy country with patches of forest or copse.

Parkeriaceae, cf. *Filicales*, *Leptosporangiatae*.

Parkia R. Br. *Leguminosae* (I. 6). 20 trop. Fls. in heads, of which either the upper or lower fls. are male or neuter. The seeds of *P. africana* R. Br. are eaten in Afr.

Parkinsonia Plum. ex L. *Leguminosae* (II. 7). 4 trop. and subtrop.

Parlatorea Barb. Rodr. (*Gomesa* R. Br. p.p.). *Orchid.* (II. 19). 1 Brazil.

Parlatoria Boiss. *Cruciferae* (2). 2 W. As.

Parmena Greene (*Rubus* p.p.). *Rosaceae* (III. 2). 5 N. Am., E. As.

Parmentiera DC. *Bignoniaceae* (4). 2 C. Am. *P. cerifera* Seem., used as fodder, has caulifloral fr. which look like candles.

Parn grass (W.I.), *Panicum molle* Sw.

Parnassia (Tourn.) L. *Saxifragaceae* (I). 25 N. temp., chiefly in mountain bogs; 1 in Brit.—*P. palustris* L. (grass of Parnassus). Floral axis hollowed out and united to the base of the ovary. K 5; C 5; A 5, and alt. with them 5 stds.; $\overline{G}$ (4) or half-inf., 1-loc., with large projecting parietal plac. The fl. (class A) is protandr., the anthers in turn dehiscing just above the pistil and then moving outwards. Std. opp. to the petals. Each has a solid nectar-secreting base, and ends above in a candelabra-like structure, each twig of which is terminated by a yellow knob, glistening in the sun and looking like a drop of honey. Flies are deceived by this appearance, and have been seen licking the knobs. [See Eichler's *Blüthendiag.* and Mrs Arber in *Ann. Bot.* xxvii. p. 491.]

Parnassus grass, *Parnassia palustris* L.

Parochetus Buch.-Ham. *Leguminosae* (III. 4). 1 Mts. of trop. As. and Afr. It has cleistogamic and open fls.

Parolinia Webb. *Cruciferae* (4). 1 Canaries.

Paronychia (Tourn.) L. *Caryophyllaceae* (I. 4). 40 cosmop. The small axillary fls. are concealed by the stipules.

Paronychiaceae. See *Caryophyllaceae* (I. 4).

Paropsia Nor. ex Thou. *Flacourtiaceae* (6). 15 trop. and subtrop. |*.

Paropsiopsis Engl. *Flacourtiaceae* (6). 1 W. Afr.

Parosela Cav. (*Dalea* p.p.). *Leguminosae* (III. 6). 50 Am.

Parquetina Baill. *Asclepiadaceae* (I). 1 Gaboon.

Parrot weed (W.I.), *Bocconia frutescens* L.; -s bill, *Clianthus*.

Parrotia C. A. Mey. *Hamamelidaceae*. 1 Persia. Fl. ♂, apert.

Parrotiopsis Schneider (*Fothergilla* p.p. EP.). *Hamamel.* 1 W. Him.

Parrya R. Br. *Cruciferae* (4). 10 N. temp. As., N. Am.

Parryella Torr. et Gray. *Leguminosae* (III. 6). 1 warm N. Am.

- Parsley**, *Petroselinum sativum* Hoffm.; -fern, *Cryptogramma crispa* R. Br.; fool's -, *Aethusa Cynapium* L.; hedge -, *Caucalis*; -piert, *Alchemilla*, (W.I.) *Petroselinum*.
- Parsnip**, *Pastinaca sativa* L.; cow-, *Heracleum Sphondylium* L.; water-, *Sium*.
- Parsonsia** R. Br. Apocynaceae (II. 2). 10 Malaya, Austr., Polynes., N.Z.
- Parthenice** A. Gray. Compositae (5). 1 Colorado to Mexico.
- Parthenium** L. Compositae (5). 10 N. and C. Am., W.I.
- Parthenocarp**y, production of fr. without fert.; **P.-genesis**, development of ovum to embryo without fert., *Alchemilla*, *Antennaria*, *Hieracium*, *Houttuynia*, *Wikstroemia*.
- Parthenocissus** Planch. (*Quinaria* Rafin.). Vitaceae. 10 temp. As., Am. *P. tricuspidata* Planch. and *P. quinquefolia* Planch. are the Virginia creepers.
- Partial**, used in sense opposed to general or total, cf. Parasites.
- Partim** (Lat.), partly.
- Partridge berry** (Am.), *Gaultheria procumbens* L., *Mitchella repens* L.; -pea (Am.), *Cassia Chamaecrista* L.
- Parvatia** Decne. Lardizabalaceae. 2 Khasias, China.
- Parviflorus** (Lat.), small-flowered.
- Pasaccardoa** O. Ktze. (*Phyllactinia* Benth.). Comp. (12). 1 trop. Afr.
- Pasania** Oerst. (*Quercus* p.p.). Fagaceae. 100 Malaya, Polynesia. Some have 3 ♀ fls. in the cupule.
- Pascal**ia Orteg. (*Wedelia* EP.). Compositae (5). 1 Chili.
- Paschanthus** Burch. (*Modecca* p.p. BH.). Passifloraceae. 1 S. Afr.
- Pascual**, growing in pastures.
- Pasithea** D. Don. Liliaceae (III). 1 Chili.
- Paspalum** L. Gramineae (5). 200 trop., and temp. Am., where they form a large proportion of the pasture of the Campos, Pampas, &c. Good fodder. *P. scrobiculatum* L. (Kodo millet) cult. in India.
- Pasque flower**, *Anemone Pulsatilla* L.
- Passerina** L. Thymelaeaceae. 4 Cape Colony.
- Passiflora** L. (BH. excl. *Tacsonia* Juss.). Passifloraceae. 275 chiefly Am.; a few in As. and Austr., 1 in Madag. Climbing pl. with axillary tendrils. Some have curious bilobed l. (crescentic or swallow-tailed in shape), the centre lobe not developing. At the base of the leaf-stalk there are usu. extra-floral nectaries. The fls. spring from the same axils as the tendrils, sol. or in small cymes; the bract is usu. 'adnate' to the peduncle. The recept. is hollowed into a cup, bearing on its margin 5 sepals, 5 petals, and a number of effigurations of the axis—thread-like petaloid bodies, forming a dense mass (the corona) round the central androphore, at whose apex is borne the ovary. Five sta. spring from the androphore at the base of the ovary, and are bent downwards at first; afterwards the styles bend down also. Honey is secreted at the base of the androphore. Fr. a berry; seed enveloped in a fleshy aril. Many passion-flowers cult. orn. fl. Several have ed. fr., e.g. *P. quadrangularis* L., the Granadilla (trop. Am.), *P. maliformis* L., the sweet calabash (W. Ind.), *P. laurifolia* L., the water-lemon, *P. edulis* Sims (passion fruit), &c.

Passifloraceae (EP.; BH. incl. *Achariaceae*, *Caricaceae*, *Malesherbiaceae*). Dicot. (Archichl. Parietales; Passiflorales BH.). 18 gen., 280 sp. trop. and warm temp. Shrubs and herbs, mostly climbers with axillary tendrils, and with alt. stip. l. Fls. ♂ or unisexual, reg. Recept. of various shapes, often hollowed and frequently with a central andro- or gyno-phore; usu. term. by outgrowths, often of petaloid or staminodial appearance, forming the *corona*. K 3—5; C 3—5 or 0; A 3—5; G (3), 1-loc. with parietal plac. and several or ∞ anatr. ov.; style 1, simple or branched, or 3—5 separate styles. Caps. or berry. Seed with fleshy aril and endosp. *Chief genera*: Modecca, Passiflora. [BH. chars. incl. those of fams. mentioned, all somewhat rare.]

Passiflorales (BH.). The 13th order of Polypetalae.

Passion-flower, - fruit, *Passiflora*.

Pastinaca L. Umbelliferae (III. 6). 15 N. temp. |*. *P. sativa* L. is the parsnip, a biennial, often cult. for ed. root.

Pasture, cf. Fodder.

Patabea Aubl. = *Psychotria* L. (Rubi.).

Patagonium Schrank (*Adesmia* BH.). Leguminosae (III. 7). 100 warm S. Am.

Patagonula L. Boraginaceae (I). 2 Brazil, Argentina. Good timber.

Patana oak (Ceylon), *Careya arborea* Roxb.

Patascoya Urb. (*Taonabo* p.p.). Theaceae. 1 Colombia.

Patchouli, *Pogostemon Patchouly* Pellet.

Patens (Lat.), spreading.

Patersonia R. Br. Iridaceae (II). 20 Austr., Tasmania.

Pathfinders, honey guides, *Myosotis*.

Patience (Am.), *Rumex Patientia* L.

Patima Aubl. Rubiaceae (I. 7). 1 Guiana.

Patosia Buchen. (*Rostkovia* p.p.). Juncaceae. 1 Chili.

✓ **Patrinia** Juss. Valerianaceae. 13 E. As. ✓

Patrisia Rich. (*Ryania* Vahl). Flacourtiaceae (7). 10 N. S. Am.

Pattalias S. Wats. (*Melinis* p.p.). Asclep. (II. 1). 2 Mexico, S.W. U.S.

Patulous, slightly spreading.

Pauciflorus (Lat.), few-flowered.

Pauladolphia Börner = *Rumex* p.p. (Polygon.).

Pauletia Cav. = *Bauhinia* L. p.p. (Legum.).

Paullinia L. Sapindaceae (I). 120 warm Am., 1 Madag., Afr. Lianes with watch-spring tendrils. Caps. often winged. *P. Cupana* H. B. et K. (guarana) cult. in Brazil; seeds used like cacao.

Paulowilhelmia Hochst. Acanthaceae (IV. A). 5 trop. Afr. Seeds often with toothed scales, spreading when wetted.

Paulownia Sieb. et Zucc. Scrophulariaceae (II. 4). 2 Chi., Jap. Trees (rare in S.). *P. imperialis* S. et Z. often cult. in parks.

Paulseniella Briquet. Labiatae (VI). 1 Pamirs.

Pauridia Harv. Haemodoraceae. 1 Cape Colony.

Pauridiantha Hook. f. Rubiaceae (I. 7). 2 trop. W. Afr.

Paurolepis Sp. Moore. Compositae (I). 1 Rhodesia.

Paurotis O. F. Cook. Palmae (I. 2). 1 Bahamas.

Pausandra Radlk. Euphorbiaceae (A. II. 5). 2 Brazil to Nicaragua.

Pausinystalia Pierre ex Beille (*Corynanthe* p.p.). Rubiaceae (I. 5). 3 trop. W. Afr.

- Pavetta** L. Rubiaceae (II. 4). 90 palaeotrop. The l. of many have little warts inhabited by bacterial colonies (Zimmermann in *Prings. Jahrb.* XXXVII. 1901, p. 1).
- Pavia** Boerh. = *Aesculus* L. (Hippocast.).
- Pavieasia** Pierre (*Sapindus* p.p.). Sapindaceae (I). 1 Tonquin.
- Pavonia** Cav. Malvaceae (3). 70 trop. and subtrop. There are 5 cpls. and 10 styles, 5 of these corresponding to cpls. which abort in development. The cpls. are hooked in fr.
- Pavonia** Ruiz et Pav. = *Laurelia* Juss. (Monim.).
- Pawpaw** (Am.), *Asimina triloba* Dun.
- Paxia** Gilg. Connaraceae. 2 W. Afr.
- Paxiodendron** Engl. Lauraceae (I). 1 E. Afr.
- Paxiuba** palm, *Iriarteia*.
- Payena** A. DC. Sapotaceae (I). 20 Malaya. *P. Leerii* Kurz yields a good gutta percha (see *Palaquium*), known as gutta sundek.
- Payera** Baill. Rubiaceae (I. 2). 1 Madag.
- Paypayrola** Aubl. Violaceae. 4 trop. Am.
- Pea**, *Lathyrus*, *Pisum*; **blackeyed** - (W.I.), *Dolichos*; **chick** -, *Cicer arietinum* L.; **Congo** - (W.I.), *Cajanus indicus* Spreng.; **cow** -, *Vigna sinensis* Endl.; **dry** -, Congo -; **- flower** (W.I.), *Centrosema*, *Clitoria*; **everlasting** -, *Lathyrus latifolius* L.; **- nut**, *Arachis hypogaea* L.; **sweet** -, *Lathyrus odoratus* L.
- Peach**, *Prunus persica* Stokes; **- palm**, *Bactris*; **- wood**, *Caesalpinia*.
- Peacock flower**, *Caesalpinia pulcherrima* Sw.
- Pear**, *Pyrus communis* L.; **alligator** -, **avocado** -, **aguacate** -, *Persea gratissima* Gaertn. f.; **anchovy** -, *Grias cauliflora* L.; **prickly** -, *Opuntia*; **wooden** -, *Xylomelum*.
- Pearcea** Regel (*Isoloma* B.H.). Gesneriaceae (II). 1 Ecuador.
- Pearl millet**, *Pennisetum typhoideum* Rich.; **- wort**, *Sagina*.
- Pearsonia** Dümmer (*Lotononis* p.p.). Leguminosae (III. 3). 11 S. Afr.
- Pecan nut**, *Carya*.
- Pechuel-Loeschea** O. Hoffm. Compositae (4). 1 W. Afr.
- Peckia** Vell. (*Cybianthus* Mart.). Myrsin. (II). 3 Brazil, Bolivia.
- Peckoltia** Fourn. Asclepiadaceae (II. 4). 1 Brazil.
- Pectiantia** Rafin. (*Mitella* p.p.). Saxifragaceae (I). 4 N. Am.
- Pectinaria** Cordem. 1899 (*Angraecum* p.p.). Orchidaceae (II. 20). 1 Madagascar, Mascarene Is.
- Pectinaria** Hack. (*Eremochloa* Buese). Gramineae (2). 6 E. Indomal.
- Pectinaria** Haw. Asclepiadaceae (II. 3). 4 S. Afr.
- Pectinate**, comb-like.
- Pectinella** J. M. Black (*Cymodocia* p.p.). Potamogeton. 1 S. coast Austr.
- Pectis** L. Compositae (6). 60 Arizona to Brazil.
- Pectocarya** DC. ex Meissn. Boraginaceae (IV. 1). 5 Pacif. Am.
- Pedaliaceae** (EP.; B.H. incl. *Martyniaceae*). Dicots. (Sympet. Tubiflorae; Personales B.H.). 14 gen., 45 sp., trop. and S. Afr., Madag., Indomal., mostly shore and desert plants. Herbs or rarely shrubs with opp. l. and glandular hairs. Fls. sol. or in cymes (usu. 3-flowered), with glands (metamorphosed fls.) at the base of the stalks, ♂, ♀. K (5); C (5); A 4, didynamous, with a post. std.; G (2) [G in *Trapella*], with long style and 2 stigmas, 2—4-loc. or apparently 1-loc., often with

false septa; ovules $1-\infty$ per loc., on axile plac. Caps. or nut, often with hooks. Embryo straight; endosp. thin. Sesamum is economically important. *Chief genera*: Pedalium, Sesamum, Harpagophytum. [BH. chars. include Martyniaceae. The chief distinctions from M. lie in the placentation, the fruit, calyx, and glandular hairs.]

Pedalineae (BH.) = Pedaliaceae.

Pedaliophyton Engl. Pedaliaceae. 1 trop. Afr.

Pedalis (Lat.), a foot long or high.

Pedalium Royen ex L. Pedaliaceae. 1 trop. Afr., As., Madag.

Pedate (l.), *Helleborus*, *Sauromatum*.

Peddiea Harv. in Hook. Thymelaeaceae. 7 S. and trop. Afr.

Pedicel, stalk of single fl. in a group.

Pedicellaria Schrank (*Gynandropsis* DC.). Capparidaceae (v). 15 trop. and sub trop.

Pedicularis (Tourn.) L. Scrophulariaceae (III. 3). 275 *, S. Am., esp. on Mts.; 2 in Brit., *P. palustris* L. and *P. sylvatica* L. (louse-wort). Semi-parasites with loose-pollen fls., fert. by humble-bees, &c.

Pedilanthus Neck. Euphorbiaceae (A. II. 8). 15 trop. Am., W.I.

Pedilochilus Schlechter. Orchidaceae (II. 16). 1 New Guinea.

Pediophytium (Cl.), an upland plant formation.

Peduncle, stalk of a group of fls., or of a single fl.

Peepul (pipul), *Ficus religiosa* L.

Peganum L. Zygophyllaceae (Rutaceae, BH.). 4 sp. Medit., As., N. Am. The seeds of *P. Harmala* L. yield turkey-red.

Pegia Colebr. (*Tapiria* BH.). Anacardiaceae (2). 1 E. Himalaya.

Peglera Bolus. Rhizophoraceae. 1 S. Afr.

Pegolettia Cass. Compositae (4). 5 S. Afr. to Java.

Peireskia Steud. = *Pereskia* Plum. (Cact.).

Peixotoa A. Juss. Malpighiaceae (1). 15 Brazil.

Pekoe, cf. *Thea*.

Pelagium (Cl.), a surface sea formation.

Pelagodendron Seem. Rubiaceae (1. 8). 1 Fiji.

Pelargonium L'Hérit. Geraniaceae. 185, chiefly S. Afr., a few Medit., Austr. Many vars. and hybrids cult. orn. fl. and l., of which one is the so-called *Geranium* of greenhouses, &c. In many the base of the stem is tuberous. An oil, used as a substitute for otto of roses, is distilled in Algeria from *P. odoratissimum* Ait.

Pelatantheria Ridl. Orchidaceae (II. 20). 3 S.E. As.

Pelea A. Gray (*Melicope* p.p. BH.). Rutaceae (1). 22 Polyn., Madag.

Pelecyphora Ehrenb. Cactaceae (III. 2). 2 Mexico.

Pelexia (Poit.) L. C. Rich. Orchidaceae (II. 2). 10 trop. Am., W.I.

Pelican flower, *Aristolochia*.

Peliosanthes Andr. Liliaceae (VIII) (Haemod. BH.). 10 Indomal.

Peliostomum E. Mey. Scrophulariaceae (1. 2). 6 S. and trop. Afr.

Pellacalyx Korth. Rhizophoraceae. 2 Malay Archipelago.

Pellaea Link. Polypodiaceae. 70 trop. and sub trop.

Pelletiera A. St Hil. (*Asterolinon* BH.). Primul. 2 S. Am., Canaries.

Pelliciera Planch. et Triana. Theaceae. 1 Panama.

Pellionia Gaudich. Urticaceae. 15 trop. and E. As., Polynes. *P. umbellata* Wedd. has the br. of the σ fls. united to form an invol.

Pellitory, *Parietaria*.

Pellucid, transparent.

Pelma Finet. Orchidaceae (II. 16). 2 New Caled., New Guinea.

Peloria, sudden development of actinom. symmetry in a normally $\cdot\cdot$ fl.,
Linaria, *Scrophulariaceae*.

Pelozia Rose. Onagraceae (2). 2 Calif., Mexico.

Peltandra Rafin. Araceae (v). 2 Atl. N. Am.

Peltanthera Benth. Loganiaceae. 1 Peru.

Peltaria Jacq. Cruciferae (2). 3 S.E. Eur., Medit.

Peltate (l.), $\pm$ circular, with petiole inserted near the centre of blade,
Nelumbium, *Tropaeolum*.

Pelticalyx Griff. Anonaceae (inc. sed.). 1 Indomal.

Peltiphyllum Engl. (*Saxifraga* p.p.). Saxifrag. (I). 1 Calif.

Peltobryon Klotzsch = *Piper* L. p.p. (Pip.).

Peltodon Pohl. Labiatae (VII). 4 Brazil, Paraguay.

Peltogyne Vogel. Leguminosae (II. 3). 5 trop. Brazil. Timber, dye.

Peltophorum Walp. Leguminosae (II. 7). 8 trop.

Peltostegia Turcz. Inc. sed. 1 Brazil.

Peltostigma Walp. Rutaceae (I). 1 Jamaica.

Pelucha S. Wats. Compositae (4). 1 Lower Calif.

Pemphis Forst. Lythraceae. 1, *P. acidula* Forst., on paleotrop. coasts,
esp. on beaches that are washing away.

Penaea L. Penaeaceae. 10 Cape Colony.

Penaeaceae (*EP.*; *BH.* incl. *Geissolomaceae*). Dicots. (Archichl.
Thymelaeales; Daphnales *BH.*). 5 gen., 25 sp., S.W. Cape Col.
Shrubby xero. of ericoid habit, with opp. evergr. l. Fls. axillary, sol.
or in pairs, the br. often coloured. Fl. δ , reg., 4-merous. Recept.
hollow, tubular. No petals. Ovary 4-loc.; style simple. Ov. 2 in
each loc., anatr. Caps. No endosp. *Chief genera*: *Penaea*, *Sarcocolla*.

Penang lawyer, *Licuala acutifida* Mart.

Pencil cedar, *Juniperus virginiana* L.; - **flower**, *Stylosanthes*.

Pendulous, drooping; - **shoots**, *Amherstia*, *Brownea*, *Carpinus*, *Saraca*.

Penianthus Miers. Menispermaceae. 2 W. trop. Afr.

Penicillaria Willd. = *Pennisetum* Rich. p.p. (Gram.).

Penicillate, brush-shaped.

Peniocereus Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 1 S. W.
U.S., Mex.

Pennantia Forst. Icacinaceae. 4 Austr., N.Z., Norfolk I.

Pennilabium J. J. Smith (*Saccolabium* p.p.). Orchidaceae (II. 20). 3
Malay Archipelago.

Pennisetum Rich. Gramineae (5). 50 trop. and subtrop. Afr., S. Eur.,
As., Am. Involucre as in *Cenchrus*. *P. typhoideum* Rich., the
bulrush, spiked, or pearl millet, is extensively cult. in India.

Penny cress, *Thlaspi*; - **royal**, *Mentha Pulegium* L.; - **wort**, *Cotyledon*
umbilicus L., *Hydrocotyle vulgaris* L.

Penta- (Gr., pref.), five; - **cyclic**, - **merous**, - **gynous**, &c.

Pentabothra Hook. f. Asclepiadaceae (II. 1). 1 Assam.

Pentacaena Bartl. Caryophyllaceae (I. 4). 5 Pac. Am.

Pentacarpaea Hiern. Rubiaceae (I. 2). 1 trop. Afr.

Pentace Hassk. Tiliaceae. 10 Malaya, Burma.

Pentaceras Hook. f. Rutaceae (I). 1 E. Austr.

- Pentachaeta** Nutt. Compositae (3). 6 Calif.
Pentachondra R. Br. Epacridaceae (3). 4 Victoria, Tasm., N.Z.
Pentaclethra Benth. Leguminosae (I. 6). 3 trop. Am. and Afr.
Pentacme A. DC. (*Shorea* p.p. *BH.*). Dipterocarp. 3 Malay, Burma.
Pentacyphus Schlechter. Asclepiadaceae (II. 1). 1 Peru.
Pentadesma Sabine. Guttiferae (V). 2 W. trop. Afr., incl. *P. butyracea* Sabine, the tallow or butter tree. The fr. yields a greasy juice used as butter.
Pentadiplandra Baill. Tiliaceae. 1 Congo.
Pentadynamis R. Br. Leguminosae (III. 3). 1 S. Austr.
Pentagonia Benth. Rubiaceae (I. 7). 8 trop. Am.
Pentaloba Lour. = *Alsodeia* Thou. (*BH.*) = *Rinorea* Aubl. (Viol.).
Pentaloncha Hook. f. Rubiaceae (I. 7). 1 W. trop. Afr.
Pentameris Beauv. = *Danthonia* DC. p.p. (Gram.).
Pentanema Cass. = *Vicoa* Cass. (*BH.*) = *Inula* L. p.p. (Comp.).
Pentanisia Harv. Rubiaceae (II. 1). 8 Afr., Madag.
Pentanopsis Rendle. Rubiaceae (I. 2). 1 Somaliland.
Pentanura Blume. Asclepiadaceae (1). 1 Sumatra.
Pentapanax Seem. Araliaceae (2). 10 Indomal., S. Am.
Pentapeltis Bunge (*Xanthosia* *BH.*). Umbellif. (I. 1). 1 W. Austr.
Pentapera Klotzsch (*Erica* p.p. *EP.*). Ericaceae (IV. 1). 1 Sicily.
Pentapetes L. Sterculiaceae. 1 Indomal.
Pentaphalangium Warb. Guttiferae (V). 1 New Guinea.
Pentaphragma Wall. Campanulaceae (1). 8 Indomal.
Pentaphylacaceae (*EP.*; *Ternstroemiaceae* p.p. *BH.*). Dicots. (Archichl. Sapindales). Only gen. *Pentaphylax* (*q.v.*).
Pentaphylax Gardn. et Champ. Pentaphylacaceae. 2 China, Malaya. Shrubs with alt. leathery l. and small ♀, reg., 5-merous, isomerous fls. in racemes below l. G (5), each with 2 pend. ov. Caps. Endosp. slight.
Pentapleura Handel-Mazzetti. Labiatae (VI). 1 Kurdistan.
Pentapogon R. Br. Gramineae (8). 1 Victoria, Tasmania.
Pentaptera Roxb. = *Terminalia* L. p.p. (Combret.).
Pentapterygium Klotzsch. Ericaceae (III. 2). 5 E. Himal., Khasia, Malay Peninsula. Fr. a five-winged berry.
Pentaptilon Pritzel (*Catosperma* Benth.). Goodeniaceae. 1 Austr.
Pentapyxis Hook. f. Caprifoliaceae. 1 Himalaya.
Pentarhaphia Lindl. Gesneraceae (II). 20 trop. Am., W.I.
Pentarrhaphis H. B. et K. Gramineae (II). 2 Mexico.
Pentarrhinum E. Mey. Asclepiadaceae (II. 1). 4 Afr.
Pentas Benth. Rubiaceae (I. 2). 20 Afr., Madag. Cult. orn. fl.
Pentasachme Wall. ex Wight. Asclepiadaceae (II. 3). 3 E. As.
Pentaschistis Stapf (*Danthonia* p.p.). Gramineae (9). 40 S. Afr.
Pentascyphus Radlk. Sapindaceae (1). 1 French Guiana.
Pentaspadon Hook. f. Anacardiaceae (3). 1 Sumatra.
Pentasticha Turcz. (*Fuirena* p.p. *BH.*). Cyperaceae (1). 1 Madag., trop. Afr.
Pentatrichia Klatt (*Inula* p.p. *EP.*). Compositae (4). 1 S.W. Afr.
Pentatropis R. Br. Asclepiadaceae (II. 1). 8 palaeotrop.
Penthea Lindl. = *Disa* Berg. (Orchid.).
Pentheriella O. Hoffm. et Muschler. Compositae (3). 1 S. Afr.

- Pentherum** Gronov. ex L. Crassulaceae. 1 N.E. Am., Chi., Japan.
Pentochna Van Tiegh. (*Ochna* p.p.). Ochnaceae. 1 Congo.
Pentodon Hochst. (*Oldenlandia* p.p. *EP.*). Rubi. (1. 2). 5 trop. Afr., S. U.S.
Pentopetia Decne. Asclepiadaceae (1). 7 Madag., Natal.
Pentopetiopsis Costantin et Galland. Asclepiadaceae (1). 1 Madag.
Pentstemon Mitch. Scrophulariaceae (II. 4). 100 N. Am., E. As.
 Several cult. orn. fl. Post. sta. repres. by a large std. which is bent down to the lower side of the C (*cf.* Scrophularia).
Pentstemonacanthus Nees. Acanthaceae (IV. A). 1 Minas Gerães.
Pentzia Thunb. Compositae (7). 10 S. Afr.
Peperomia Ruiz et Pav. Piperaceae. 500 trop. and subtrop., esp. Am.
 Many are epiph. with creeping stems, adv. roots and fleshy l. (water-tissue under the upper epidermis). Fls. ♀, with 2 sta., arranged in term. spikes, which may, as in *Piper*, give rise to a sympodium. (See *Ann. Bot.* XX. p. 395, and XXI. p. 139.)
Peplidium Delile. Scrophulariaceae (II. 6). 2 palaeotrop.
Peplis L. Lythraceae. 3, wet places, N. temp. *P. Portula* L. in Brit., a little annual herb, very like *Montia fontana* with minute hexamerous fls. Self-fert. by the bending inwards of the sta. over the stigma. Fr. biloc. (the partition does not come up to the very apex) with many seeds, but indeh. When submerged the pl. has a more etiolated structure and becomes perennial.
Peplonia Decne. Asclepiadaceae (II. 1). 2 Brazil.
Pepo (Tourn.) L. = *Cucurbita* Tourn. (*Cucurb.*).
Pepo, the fruit of Cucurbitaceae.
Peponia Naud. Cucurbitaceae (3). 10 Afr., Madag.
Peponium Engl. (*Peponia* Naud.). Cucurbitaceae (3). 10 Afr., Madag.
Peponopsis Naud. Cucurbitaceae (3). 1 trop. Am.
Pepper, *Piper*; **African** - (W.I.), *Xylopia*; **betel** -, *Piper Bette* L.; **Cayenne** -, *Capsicum annuum* L.; - **bush** (Am.), *Clethra*; - **elder** (W.I.), *Peperomia*, &c.; - **grass** (Am., W.I.), *Lepidium*; **Guinea** - (W.I.), *Xylopia*, *Capsicum*; **Japan** -, *Zanthoxylum*; **Melegueta** -, *Anomum*; - **mint**, *Mentha piperita* L.; **negro** - (W.I.), *Xylopia*; **red** -, *Cayenne*; - **rod** (W.I.), *Croton humilis* L.; - **root** (Am.), *Deniaria*; - **tree**, *Schinus Molle* L.; **wall** -, *Sedum acre* L.; **water** -, *Elatine Hydropiper* L., &c.; - **wort** (Am.), *Lepidium*.
Pepperidge, *Nyssa*.
Pera Mutis. Euphorbiaceae (A. II. 2). 20 trop. Am.
Peracarpa Hook. f. et Thoms. Campanulaceae (1). 1 Himalaya.
Perama Aubl. Rubiaceae (II. 10). 6 trop. S. Am., W.I.
Peramium Salisb. (*Goodyera* p.p.). Orchidaceae (II. 2). 2 N. Am.
Peranema Don. Polypodiaceae. 1 India.
Peraphyllum Nutt. ex Torr. et Gray (*Amelanchier* p.p.). Rosaceae (II). 1 N.W. Am.
Peraphora Miers (*Lophophytium* p.p. *BH.*). Menisp. 1 Himal., Khasias.
Percurrent, extending throughout entire length.
Perdicium L. = *Gerbera* Gronov. et Trixis R. Br. (Comp.).
Perebea Aubl. Moraceae (II). 10 trop. Am.
Pereilema J. et C. Presl. Gramineae (8). 3 trop. Am.

Perenideboles Goyena. Acanthaceae (IV. B). 1 Nicaragua.

Perennial, living for more than two years.

Pereskia Plum. ex L. Cactaceae (I). 18 trop. Am., W.I. Leafy plants (see fam.). Some, e.g. *P. aculeata* Mill., climb like *Rubus* with recurved thorns.

Pereskiopsis Britton et Rose (*Opuntia* et *Pereskia* p.p.). Cactaceae (I). 12 trop. Am.

Perezia Lag. Compositae (12). 75 Texas to Patagonia.

Pereziopsis Coulter. Compositae (12). 1 Guatemala.

Perfoliate (l.), united round the stem, *Baptisia*, *Bupleurum*.

Perforate, pierced through, or with translucent dots.

Perfumes, *Acacia*, *Acorus*, *Andropogon*, *Citrus*, *Curcuma*, *Dipteryx*, *Iris*, *Mesua*, *Michelia*, *Osmanthus*, *Pandanus*, *Plumieria*, *Pogostemon*, *Polyanthes*, *Rosa*, *Thymus*; &c., &c.

Pergamena Finet. Orchidaceae (II. 4). 1 Japan.

Pergularia L. Asclepiadaceae (II. 3). 15 Afr. and trop. As.

Peri- (Gr. pref.), around; **-anth**, see below; **-carp**, the fruit wall; **-chylous**, with aqueous tissue round the green tissue; **-derm**, bark; **-gone**, perianth; **-gyny**, cf. Ovary; **-sperm**, nutrient tissue round the embryo, derived from the nucellus, *Aizoaceae*, *Canna*, *Caryophyllaceae*, *Nymphaeaceae*, *Phytolaccaceae*, *Piperaceae*.

Periandra Mart. ex Benth. Leguminosae (III. 10). 6 Brazil.

Perianth, the outer covering of the fl., composed of non-reproductive l., usu. divided into an outer greenish whorl, the K, and an inner, coloured, the C. Concrescence is frequent, and the petals may be aborted (only recognisable for certain when many closely related forms possess them), thus giving an *apetalous* fl. Fl. with perianth, *chlamydeous*, without, *naked* or *achlamydeous*; with one whorl, *haplo-* or *mono-chlamydeous* or 'incomplete' (*apetalous* if the phenomenon is due to suppression of C), with two whorls, *di-* or *diplo-chlamydeous* or 'complete.' P with l. of one kind only (*tepals*) *homo-chlamydeous*, of two kinds (*sepals* forming a *calyx*, and *petals* a *corolla*), *heterochlamydeous*.

The P (K, C) may be *hypo-*, *peri-*, or *epi-gynous*; of free organs (*poly-phyllous*, *-sepalous*, *-petalous*) or concrescent (*gamo-phyllous*, *-sepalous*, *gamo-* or *sym-petalous*); in the latter case the concrescent part or *tube* bears the free *lobes*, *teeth*, or *segments* together forming the *limb*. It may also be *regular* (*actinomorphic*) or *irregular* (*zygomorphic*, or *asymmetrical*). If it fall as the bud opens, it is *caducous*, just after fert., *deciduous*; if it remain unwithered round the fr., *persistent*; withered, *marcescent*; enlarged, as in *Physalis*, *accrescent*.

A homochlam. P may be *sepaloid* (looking like a K in colour and texture) or *petaloid* (like a C). The aestivation is described in the terms given under Aestivation.

The sepals are commonly leafy and green, but sometimes $\pm$ woody (some Myrtaceae, &c.), or brightly coloured (Clerodendron, some Ranunculaceae, &c.). In many epig. fls. they are much reduced, e.g. in Umbelliferae and Rubiaceae. In Compositae they are frequently repres. by a *pappus* of hair or bristles. If concrescent, the K is described by the terms given for the C. In Malvaceae, some Rosaceae (e.g. *Potentilla*) and Lythraceae there is an *epicalyx* of apparent stipular nature (see also Dipsaceae).

The petals are usu. of some other colour than green, and of delicate texture. They may be narrowed at the base, as in wallflower, into a *claw* (*unguiculate*), fringed with hair-like teeth, as in pinks (*fimbriate*), *bi-fid*, *tri-fid*, &c. (*cf.* l.), or divided into several long segments (*laciniate*); they may be *spurred* (with long hollow projection, as in *Viola*), *saccate* or *gibbous* (with projecting broad pouch), *scaphoid* (boat-shaped, as in *Loasa*), &c. The general form of the sympetalous corolla may be *tubular*, *funnel-shaped*, *urceolate* (urn-shaped), *campanulate* (bell-shaped as in Canterbury bells), *rotate* (wheel-shaped with little or no tube, as in *Veronica*), *salver-shaped* (ditto, but with long tubular portion, as in primrose), *spurred*, *saccate*, *gibbous*, *ventricose* (swollen out all round in the basal part); if irreg., it may be *labiate* or *bilabiate* (with two projecting lips, as in Labiatae), *personate* (labiate, mouth closed by projecting lobe, as in Antirrhinum, &c.), *helmet-shaped*, *ligulate* (strap-shaped, as in dandelion, &c.), &c.

The shape, texture, &c. of the individual sepals, petals, calyx-lobes, corolla-lobes, are described as if they were leaves.

Perianthomega Bur. (*Bignonia* p.p.). Bignon. (I). 1 C. Brazil.

Perianthostelma Baill. Asclepiadaceae (II. 1). 3 trop. Afr.

Periblema DC. (*Boutonia* DC. *EP.*). Acanthaceae (IV. A). 1 Madag.

Periblepharis Van Tiegh. (*Luxemburgia* p.p.). Ochn. 1 Brazil.

Pericampylus Miers. Menispermaceae. 6 E. Indomal.

Perichasma Miers (*Stephania* p.p. *BH.*). Menispermaceae. 1 trop. W. Afr.

Perichlaena Baill. Bignoniaceae (2). 1 Madag.

Periclymenum Tourn. ex Rupp. = *Lonicera* L. p.p. (Caprifol.).

Pericome A. Gray. Compositae (6). 2 S. U.S., Mexico.

Pericopsis Thw. Leguminosae (III. 1). 1 Ceylon, yielding a pretty cabinet wood (nedun).

Perictenia Miers (*Odontadenia* p.p. *EP.*). Apocyn. (II. 1). 1 Peru.

Peridiscus Benth. Flacourtiaceae (inc. sed.). 1 Braz., Venezuela.

Periestes Baill. Acanthaceae (IV. B). 2 Madagascar, Comoros.

Perilla Linn. Labiatae (VI). 3 India to Japan.

Perillula Maxim. Labiatae (VI). 1 Japan.

Perilomia H. B. et K. Labiatae (VI). 8 Chili to Mexico.

Perinerion Baill. (*Baissa* A. DC. p.p.). Apocyn. (II. 1). 1 Angola.

Periodicity, usu. correlated with periodicity in climate, *e.g.* winter and summer, wet and dry, or hot and cool seasons. And *cf.* *Agave*, *Fagus*, &c.

Periomphale Baill. Gesneriaceae (inc. sed.). 2 New Caledonia.

Peripeplus Pierre. Rubiaceae (II. 5). 1 Gaboon.

Periphragmos Ruiz et Pav. (*Cantua* Juss.). Polemon. 2 Andes.

Periploca Tourn. ex L. Asclepiadaceae (I). 12 temp. |*, trop. Afr.

Peripterygia Loes. (*Pterocelastrus* p.p.). Celastr. 1 New Caled.

Peristeria Hook. Orchidaceae (II. 13). 5 C. Am., incl. *P. elata* Hook. (dove orchid). Cult. orn. fl.

Peristethium Van Tiegh. (*Loranthus* p.p.). Loranth. (I). 1 Andes.

Peristrophe Nees. Acanthaceae (IV. B). 15 palaeotrop.

Peristylus Blume (*Habenaria* p.p.). Orchidaceae (II. 1). 80 warm |*.

Perithrix Pierre (*Batesanthus* *EP.*). Asclepiad. (I). 1 Cameroons.

Peritoma DC. = *Cleome* L. (Cappar.).

- Perityle** Benth. Compositae (6). 15 S.W. U.S., Mexico.
Periwinkle, *Vinca*.
Perizoma Miers (*Salpichroa* p.p.). Solanaceae (2). 1 S. E. U.S.
Pernambuco rubber, *Hancornia speciosa* Gomes.
Pernettya Gaudich. Ericaceae (II. 2). 30 S. Am., Mexico, Tasm., N.Z.
Pernettyopsis King et Gamble. Ericaceae (II. 2). 2 Malay Penins.
Peronema Jack. Verbenaceae (5). 1 Malay Archipelago.
Perotis Ait. Gramineae (3). 5 palaeotrop.
Perotriche Cass. Compositae (4). 1 S. Cape Colony.
Perovskia Karel. Labiatae (VI). 4 W. As.
Perpusillus (Lat.), very small.
Perralderia Coss. (*Grantia* BH.). Compositae (4). 2 N. W. Afr.
Perriera Courchet. Simarubaceae. 1 Madagascar.
Perrieranthus Hochr. Malvaceae (4). 1 Madag.
Perrierophytum Hochr. Malvaceae (4). 1 Madag.
Perrottetia H. B. et K. Celastraceae. 10 Mexico, C. Am., Polynesia.
Persea Plum. ex L. Lauraceae (1). 20 trop. Am. The fr. of *P. gratissima* Gaertn. f. (aguacate, avocado, alligator pear, palta) is ed.
Persian berries, yellow berries, *Rhamnus infectoria* L.; - **insect powder**, *Chrysanthemum roseum* Adam.; - **lilac**, *Melia Azedarach* L.
Persica (Tourn.) Mill. = *Prunus* L. (Ros.).
Persicaria (Tourn.) L. (*Polygonum* p.p.). Polygonaceae (II. 2). 75 N. Am.
Persimmon, *Diospyros virginiana* L., *D. Kaki* L. f., &c.
Persistent (P, K, C), remaining unwithered round the fl., *Corylaceae*, *Fagaceae*, *Physalis*.
Personales (BH.). The 9th order of Gamopetalae.
Personatae (Warming). The 5th order of Sympetalae.
Personate (C), labiate, mouth closed by projecting lobe, *Antirrhinum*.
Persoonia Sm. Proteaceae (I). 60 Austr., N.Z.
Pertusate, with slits.
Pertya Sch.-Bip. Compositae (12). 5 Japan to Afghanistan.
Peru, balsam of, *Myroxylon Pereirae* Klotzsch; - **bark**, *Cinchona*; **marvel of** -, *Mirabilis*; - **vian nutmeg**, *Laurelia*.
Perularia Lindl. (*Habenaria* p.p. BH.). Orchid. (II. 1). 1 N. Am., As.
Pervillaea Decne. Asclepiadaceae (II. 3). 1 Madag.
Perymenium Schrad. Compositae (5). 25 C. Am.
Pescatoria Rehb. f. (*Zygopetalum* p.p. BH.). Orchidaceae (II. 14). 10 Colombia. Cult. orn. fl.
Peschiera A. DC. = *Tabernaemontana* Plum. (Apocyn.).
Pessopteris Underwood (*Polypodium* p.p.). Polypod. 1 trop. Am.
Pestallozzia Zoll. et Morr. = *Gynostemma* Blume (Cucurb.).
Petagnia Guss. Umbelliferae (III. 2). 1 Sicily.
Petal, a l. of the C, usu. coloured; - **ody**, change of sta. to pet.; - **oid**, petal-like; - **omania**, abnormal increase of petals.
Petalacte D. Don. Compositae (4). 1 W. Cape Colony.
Petalactella N. E. Br. Compositae (4). 1 S. Afr.
Petalidium Nees (*EP.* excl. *Pseudobarleria*). Acanth. (IV. A). 1 Indomal.
Petalinia Becc. (*Ochanostachys* p.p. *EP.*). Olacaceae. 1 Banka.

- Petalodiscus** Baill. (*Savia* B.H.). Euphorbiaceae (A. I. 1). 5 Madag.
- Petalolophus** K. Schum. Anonaceae (4). 1 New Guinea.
- Petalonema** Gilg. Melastomaceae (1). 1 trop. E. Afr.
- Petalonyx** A. Gray. Loasaceae. 4 Mexico, S.W. U.S.
- Petalostelma** Fourn. Asclepiadaceae (II. 3). 1 Brazil.
- Petalostemma** R. Br. Inc. sed. 1 Abyssinia.
- Petalostemon** Michx. (*Kuhnistera* E.P.). Legumin. (III. 6). 25 N. Am.
- Petalostigma** F. Muell. Euphorbiaceae (A. I. 1). 1 E. Austr.
- Petalostylis** R. Br. Leguminosae (II. 5). 1 Austr.
- Petasites** (Tourn.) L. Compositae (8). 15 N. temp. *P. officinalis* Moench (butter-bur) in Brit. spreads largely by rhiz. It is dioecious (*cf.* Tussilago, its close ally). The ♂ head has about 30 fls. with the usual mech. of Compositae, the style acting as pollen-presenter, though the ovary is not fertile. Occasionally a few ♀ fls. are found. The ♀ head consists of about 150 ♀ fls. surrounding 1—3 ♂ fls. Only the male fls. secrete honey. *P. fragrans* Presl (winter heliotrope) cult. perf. fls., which appear in Feb.
- Petastoma** Miers (*Bignonia* p.p. B.H.). Bignoniaceae (1). 8 trop. Am.
- Peteria** A. Gray. Leguminosae (III. 6). 1 New Mexico.
- Petermannia** F. Muell. Dioscoreaceae. 1 New S. Wales.
- Petersia** Welw. Lecythidaceae. 2 W. trop. Afr.
- Petersianthus** Merrill (*Petersia* Welw.). Lecythid. 3 Afr., Phil. I.
- Petesia** P. Br. = *Rondeletia* L. (Rubi.).
- Petesioides** Jacq. (*Wallenia* Sw.). Myrsinaceae (II). 4 W.I.
- Petiole**, leafstalk; **sensitive** -, *cf.* Climbing Plants.
- Petitja** Jacq. Verbenaceae (4). 4 Mexico, W.I.
- Petitmenginia** Bonati. Scrophulariaceae (III. 2). 1 Cambogia.
- Petiveria** Plum. ex L. Phytolaccaceae. 1 warm Am., W.I.
- Petlomelia** Nieuwland (*Fraxinus* p.p.). Oleaceae. 1 N. Am.
- Petraeus** (Lat.), growing on rocks; **petrium** (Cl.), a rock formation; **-odium** (Cl.), a boulder field formation.
- Petraeovitex** Oliv. Verbenaceae (5). 3 Malay Archipelago.
- Petrea** Houst. ex L. Verbenaceae (1). 12 trop. Am., W. Ind. Cult. orn. fl., climber.
- Petrobium** R. Br. Compositae (5). 1 St Helena.
- Petrocallis** R. Br. (*Draba* p.p. B.H.). Cruciferae (2). 1 Mts. S. Eur.
- Petrocarya** Schreb. = *Parinarium* Aubl. (Ros.).
- Petrocodon** Hance. Gesneriaceae (1). 1 Chili.
- Petrocoptis** A. Br. (*Lychnis* p.p. B.H.). Caryophyll. (II. 1). 2 Pyrenees.
- Petrocosmea** Oliv. Gesneriaceae (1). 3 China.
- Petrollinia** Chiov. (*Inula* p.p.). Compositae (4). 1 E. trop. Afr.
- Petromecon** Green (*Eschscholtzia* p.p.). Papaver. (II). 2 Calif.
- Petronia** Barb. Rodr. (*Promenaea* p.p. E.P.). Orchid. (II. β. II). 1 Braz.
- Petrophila** R. Br. Proteaceae (1). 35 Austr.
- Petrophytes** Webb et Berth. = *Monanthes* Haw. (Crassul.).
- Petrophyton** Rydberg (*Spiraea* p.p.). Rosaceae (I. 1). 5 N. Am.
- Petrosavia** Becc. Liliaceae (1). 1 Borneo.
- Petroselinum** Hoffm. (*Carum* p.p. B.H.). Umbelliferae (III. 5). 5 Eur., Medit. *P. sativum* Hoffm. is the parsley, cult. as condiment.

- Petrosimonia** Bunge. Chenopodiaceae (B). 7 Greece to C. As.
Petrusia Baill. Olacaceae. 1 Madagascar.
Petteria C. Presl. Leguminosae (III. 3). 1 S.E. Eur.
Petty whin, *Genista anglica* L.
Petunga DC. Rubiaceae (1. 8). 6 E. Indomal.
Petunia Juss. Solanaceae (4). 15 S. and warm N. Am. *P. violacea* Lindl. and others often cult. orn. fl.
Peucedanum (Tourn.) L. (*BH.* incl. *Anethum* Tourn., *Pastinaca* L.). Umbelliferae (III. 6). 180 Eur., As., Afr., Am.; 4 in Brit. *P. sativum* Benth. et Hook. f. (parsnip), cf. *Pastinaca*. *P. (A.) graveolens* Benth. et Hook. f. (Medit.) is the dill; fr. a condiment; *P. officinale* L. (Brit.) is the sulphur-root used in veterinary practice; *P. Ostruthium* Koch (Brit.) is also used.
Peucephyllum A. Gray. Compositae (8). 1 S.W. U.S.
Peumus Molina. Monimiaceae. 1 Chili, *P. Boldus* Molina, the Boldo. Wood hard; bark yields dye; fr. ed.
Peutalis Rafn. = *Polygonum* Tourn. (Polyg.).
Peyrousea DC. Compositae (7). 1 Cape.
Pezisicarpus Vernet. Apocynaceae (II. 1). 1 Siam.
Pfiaffia Mart. Amarantaceae (3). 20 warm S. Am.
Pfeiffera Salm-Dyck (*Rhipsalis* p.p.). Cact. (III. 3). 1 S. Braz.
Phaca L. (*Astragalus* p.p.). Leguminosae (III. 6). 60 N. Am.
Phacelia Juss. (incl. *Cosmanthus* Nolte, *Eutoca* R. Br., *Whitlavia* Harv.). Hydrophyllaceae. 100 N. Am., Andes, often cult. orn. fl. The fl. is a bee-flower with honey secreted below the ovary and guarded by stipule-like flaps at the base of the sta. The large-flowered sp. are highly protandrous. The anther as it dehisces turns inside out.
Phacellanthus Sieb. et Zucc. Orobanchaceae. 1 Japan.
Phacellaria Benth. Santalaceae. 2 Further India.
Phacellothrix F. Muell. Compositae (4). 1 E. trop. Austr.
Phacelophrynium K. Schum. (*Phrynium* p.p.). Marantaceae. 6 Malaya.
Phacopsis Rydberg (*Astragalus* p.p.). Legum. (III. 6). 2 N. Am.
Phaeanthus Hook. f. et Thoms. Anonaceae (2). 7 Malaya.
Phaeasium Cass. (*Crepis* p.p. *EP.*). Compositae (13). 3 Eur., W. As.
Phaedranassa Herb. Amaryllidaceae (1). 4 Andes.
Phaedranthus Miers (*Bignonia* p.p. *BH.*). Bignoniaceae (1). 1 Mex.
Phaenixopus Cass. = *Lactuca* Tourn. p.p. (Comp.).
Phaenocoma D. Don. Compositae (4). 1 Cape Colony. Cult. orn. fl.
Phaenogams, Phanerogams, *Spermatophyta*.
Phaenohoffmannia O. Ktze. (*Pleiospora* Harv.). Leguminosae (III. 3). 1 S. Afr.
Phaenology, study of the periodic phenomena of vegetation.
Phaenopyrum M. Roem. = *Crataegus* Tourn. (*BH.*) = *Cotoneaster* Rupp.
Phaenosperma Munro ex Benth. Gramineae (4). 1 China.
Phaeocephalus Sp. Moore. Compositae (7). 1 Cape Colony.
Phaeomeria Lindl. (*Amomum* p.p. *BH.*). Zingiber. (1). 16 Indomal.
Phaeoneuron Gilg. Melastomaceae (1). 4 trop. Afr.
Phaeopappus Boiss. = *Centaurea* L. p.p. (Comp.).

- Phaeoptilum** Radlk. Nyctaginaceae. 1 S. Afr.
Phaeospheriona Hassk. (*Athyrocarpus* BH.). Commelin. 4 trop. Am.
Phaeostemma Fourn. Asclepiadaceae (II. 4). 2 Brazil.
Phagnalon Cass. Compositae (4). 20 Canaries to Himalaya.
Phaiocalanthe × Rolfe. Orchidaceae. Hybrid, Phaius-Calanthe.
Phaiocymbidium ×. Orchidaceae. Hybrid, Phaius-Cymbidium.
Phaius Lour. (*Phajus* Hassk.). Orchidaceae (II. 9). 16 trop. As., Malaya, Austr., &c. Terrestrial.
Phalacraea DC. = *Piqueria* Cav. (Comp.).
Phalacrocarpum Willk. (*Chrysanthemum* p.p. BH.). Comp. (7). 1 Spain.
Phalacroderis DC. (*Rodigia* EP.). Compositae (13). 1 Aegean.
Phalacrodiscus Bess. = *Chrysanthemum* Tourn. p.p. (Comp.).
Phalacroceris A. Gray. Compositae (13). 1 California.
Phalaenopsis Blume. Orchidaceae (II. 20). 40 Indomal. Epiph. with flattened aerial roots.
Phalangium (Tourn.) Adans. = *Anthericum* L. p.p. (Lili.).
Phalaris L. Gramineae (7). 10 Eur. *P. canariensis* L. (canary grass) seeds are used for cage-birds. *P. arundinacea* L. (reed-grass) is common in Brit.
Phaleria Jack. Thymelaeaceae. 12 Indomal.
Phanera Lour. = *Bauhinia* L. p.p. (Legum.).
Phanerogamae, see Spermaphyta.
Phanerophlebia Presl. Polypodiaceae. 10 trop. Am.
Phania DC. Compositae (2). 3 W.I.
Phanopyrum Nash (*Panicum* p.p.). Gramineae (5). 1 N. Am.
Pharbitis Choisy (*Ipomoea* p.p. BH.). Convolvulaceae (1). 6 trop. and subtrop. Cult. orn. fl.
Pharetranthus F. W. Klatt (*Coreopsis* p.p. EP.). Comp. (5). 1 Phil.
Pharmacosycea Miq. = *Ficus* Tourn. p.p. (Mor.).
Pharnaceum L. Aizoaceae (1). 16 S. Afr.
Pharus P. Br. Gramineae (6). 5 trop. Am.
Phaseolus (Tourn.) L. Leguminosae (III. 10). 160 trop. and warm temp. Fl. mech. like *Vicia*, but complicated by the spiral coiling of the keel with the inclosed style. *P. multiflorus* Willd. (Mexico) is the scarlet-runner, *P. vulgaris* L. the French or kidney bean, *P. lunatus* L. the Lima or duffin bean similarly used in the trop., *P. acutifolius* A. Gray the tepary of the S.W. U.S., *P. Mungo* L. (*P. Max* L.) the 'green gram' of India, used like kidney beans, or roasted, and as horse food. The var. *radiatus* of the last, with darker beans (black gram), is a highly valued pulse and horse food in India.
Phaulanthus Ridl. (*Anerincleistus* p.p.). Melastomaceae (1). 6 Malay Peninsula, Assam.
Phaulothamnus A. Gray Phytolaccaceae. 1 North Mexico.
Phayloopsis Willd. (*Micranthus* EP.). Acanthaceae (IV. A). 12 palaetrop.
Pheasant's eye, *Adonis autumnalis* L.
Phebalium Vent. Rutaceae (1). 35 Austr., N.Z.
Phegopteris Fée = *Dryopteris* Adans. (Polypod.).
Phellandrium (Tourn.). L. = *Oenanthe* Tourn. p.p. (Umbellif.).

- Phelypaea** Tourn. ex L. Orobanchaceae. 2 Cent. As.
Phelline Labill. Aquifoliaceae. 12 New Caledonia.
Phellium (Cl.), a rock field formation.
Phellodendron Rupr. Rutaceae (IV). 4 E. temp. As.
Phellogen, formative tissue of cork (bark).
Phellolophium Baker. Umbelliferae (III. 5). 1 Madag.
Phellopterus Benth. in B. et H. f. = *Glehnia* F. Schmidt (Umb.).
Phellopterus Nutt. (*Cymopterus* Rafin. p.p.). Umbelliferae (III. 6).
 4 E. As., W. N. Am.
Phenax Wedd. Urticaceae (3). 12 trop. Am.
Pherosphaera Archer (*Dacrydium* p.p.). Coniferae (Taxaceae 1; see
 C. for gen. chars.). 1 Austr., 1 Tasmania. Shrubs.
Pherotrichis Decne. Asclepiadaceae (II. 4). 2 Mexico.
Phialacanthus Benth. Acanthaceae (IV. B). 1 E. Bengal.
Phialanthus Griseb. Rubiaceae (II. 3). 4 W. I.
Phialocarpus Defflers. Cucurbitaceae (2). 1 Arabia.
Phialodiscus Radlk. (*Blighia* p.p.). Sapindaceae (I). 5 trop. Afr.
Philactis Schrad. Compositae (5). 2 Mexico.
Philadelphus (Riv.) L. Saxifragaceae (III). 20 N. temp. Shrubs with
 opp. l.; the buds arise closely protected by the l.-bases through which
 in many they have to break. Fls. conspicuous, strongly scented,
 protogynous. Sta. 20—40; ovary inf., usu. 4-loc. Several sp. cult.
 orn. fl. shrub (*Syringa*).
Philastrea Pierre. Sterculiaceae. 1 Cambodia.
Philbornea Hallier (*Durandea* p.p.). Linaceae. 2 Borneo.
Philesia Comm. ex Juss. Liliaceae (x). 1 S. Chili, a much-branched
 shrub with petioled, 1-nerved, rolled-back l., not easily recognised
 as a Monocot.
Philgamia Baill. Malpighiaceae (inc. sed.). 1 Madag.
Philibertella Vail. (*Philibertia* p.p.). Asclep. (II. 1). 10 N. Am.
Philibertia H. B. et K. Asclepiadaceae (II. 1). 35 Am.
Philippia Klotzsch. Ericaceae (IV. 2). 20 S. Afr., Madag., Masc.
Philippiella Spegazz. Caryophyllaceae (I. 4). 1 Patagonia.
Phillipsia Rolfe (*Satanocrater* p.p. EP.). Acanthaceae (IV. A). 1
 Somaliland.
Phillyrea L. Oleaceae. 6 Medit.
Phillyrophyllum O. Hoffm. Compositae (4). 1 Kalahari desert.
Philodendron Schott. Araceae (v). 225 trop. Am. Most are shrubs,
 usu. climbing, often epiph., with both clasping roots and aerial roots
 reaching the soil (see fam.). The latter sometimes twine as they
 descend. The pinnation of the l. is due to a delayed development
 of the portions between the ribs, and not to a process such as occurs
 in *Monstera* (q.v.). Monoecious.
Philodice Mart. Eriocaulonaceae. 2 Brazil.
Philoglossa DC. Compositae (5). 2 Peru, Ecuador.
Philogyne Salisb. = *Narcissus* Tourn. p.p. (Amaryll.).
Philonotion Schott. Araceae (v). 1 Amazonas.
Philotheca Rudge. Rutaceae (I). 5 Austr.
Philotria Rafin. (*Elodea* p.p.). Hydrocharidaceae. 5 N. Am.
 -philous (Gr. suff.), loving, dwelling in.
Philoxerus R. Br. (*Iresine* p.p. EP.). Amarant. (3). 10 trop. exc. As.

- Philydraceae** (*EP.*, *BH.*). Monocots. (Farinosae; Coronarieae *BH.*). 3 gen., 4 sp., Indomal., Austr. Herbs with 2-ranked sheathing narrow l. and fls. in spikes, ♂, ♀, homochlam. A 1, ant. $\underline{G}$ (3), style 1, plac. axile or parietal, with ∞ anat. ov. Caps. Endosp.
- Philydrum** Banks. Philydraceae. 1 E. As., Austr.
- Philyrophyllum** O. Hoffm. Compositae (4). 1 Kalahari desert.
- Phinaea** Benth. Gesneriaceae (II). 4 Colombia.
- Phippsia** R. Br. Gramineae (8). 1 arctic, 1 Indomal., 1 Argentina (*cf.* *Cryptotaenia*).
- Phitopsis** Hook. f. Rubiaceae (I. 3). 1 Peru.
- Phlebanthia** Reichb. Caryophyllaceae (inc. sed.). Nomen.
- Phlebocalymna** Griff. ex Miers (*Gonocaryum EP.*). Olacaceae. 4 E. As., Austr.
- Phlebocarya** R. Br. Amaryllidaceae (III) (IIaemod. *BH.*). 3 W. Austr.
- Phlebochiton** Wall. (*Tapiria BH.*, *Pegia EP.*). Anacardiaceae (2). 1 E. Himalaya.
- Phlebolithis** Gaertn. Sapotaceae (inc. sed.). 1, habitat?
- Phlebotaenia** Griseb. (*Polygala p.p. EP.*). Polygalaceae. 1 Cuba.
- Phleum** L. Gramineae (8). 10 temp. except Austr. *P. pratense* L., timothy-grass (Brit.), is a valuable fodder.
- Phloem**, the outer part of the vascular bundle, carrying prepared food.
- Phloga** Nor. ex Thou. Palmae (IV. 1). 2 Madag.
- Phlogacanthus** Nees. Acanthaceae (IV. B). 15 Indomal. Cult. orn. fl.
- Phlogella** Baill. Palmae (IV. 1). 1 Comoros.
- Phlomis** L. Labiatae (VI). 65 Medit. to China. The upper lip of the fl. is raised by an entering insect.
- Phlox** L. Polemoniaceae. 50 N. Am., Siberia. Cult. orn. fl.
- Phoberos** Lour. = *Scolopia* Schreb. (Flac.).
- Phoceia** Seem. Celastraceae. 1 New Caledonia.
- Phoebanthus** Blake (*Helianthella p.p.*). Compositae (5). 1 N. Am.
- Phoebe** Nees. Lauraceae (1). 55 Indomal., trop. Am., W. I.
- Phoenicanthemum** Blume = *Loranthus* L. p.p. (Loranth.).
- Phoenicaulis** Nutt. (*Cheiranthus p.p. BH.*). Cruciferae (3). 1 Pacific Am.
- Phoeniceus** (Lat.), scarlet.
- Phoenicophorium** H. Wendl. (*Stevensonia BH.*). Palmae (IV. 1). 1 Seychelles.
- Phoenicospermum** Miq. (*Sloanea p.p. EP.*). Elaeocarp. 1 Java.
- Phoenix** L. Palmae (I. 1). 12 trop. Afr., As., incl. *P. dactylifera* L. (date palm, Afr., S.W. As.). It has a columnar stem covered with old l.-bases; the l. are pinnate. Fls. dioec.; the Arabs fert. the ♀ spadix by hanging a ♂ over it. Berry; seeds with hard (cellulose) endosp. It yields fruit, wine, sugar, hats, mats, thatch, &c.
- Pholidia** R. Br. Myoporaceae. 57 Austr.
- Pholidocarpus** Blume. Palmae (II). 5 Malaya.
- Pholidostachys** H. Wendl. Palmae (IV. 1). 1 Costa Rica.
- Pholidota** Lindl. Orchidaceae (II. 3). 35 Indomal., S. China.
- Pholisma** Nutt. Lennoaceae. 1 California.
- Phoradendron** Nutt. Loranthaceae (II). 100 Am.
- Phormium** Forst. Liliaceae (III). 2 N.Z. Leaves isobil. The l. of *P. tenax* Forst. furnishes New Zealand flax. Cult. orn.

- Phornothamnus** Baker. Melastomaceae (1). 1 Madag.
-phorus (suff.), stalk, bearer (bearing).
Photinia Lindl. Rosaceae (11). 20 S.E. As., N. Am.
Photinopteris J. Sm. Polypodiaceae. 1 Malaya, Phil. Is.
Phoxanthus Benth. (*Ophiocaryon* EP.). Sabiaceae. 1 Amazonas.
Phragmites Trin. Gramineae (10). 3, 1 Argentine, 1 trop. As. and 1 cosmop. (incl. Brit.), *P. communis* L. the common reed. It forms floating fens at the Danube mouth. It has a creeping rhiz. and tall upright stem with a dense panicle of spikelets. The lowest fl. of the spikelet is ♂, the rest ♀. A few cm. above the leaf-sheath are three transverse dents in the l. (Teufelsbiss); these are due to pressure at the time when the rolled up blade is still in the sheaths of older l.
Phragmopedilum Rolfe. Orchidaceae (1. 2). 12 trop. Am.
Phreatia Lindl. Orchidaceae (11. 15). 40 Indomal.
Phretium (Cl.), a tank formation.
Phrissocarpus Miers (*Tabernaemontana* p.p.). Apocynaceae (1. 3). 1 S. Am.
Phrodus Miers. Solanaceae (2). 4 Chili.
Phryganocydia Mart. (*Macfadyena* BH.). Bignoniaceae (1). 1 E. S. Am.
Phrygilanthus Eichl. (*Loranthus* p.p. BH.). Loranthaceae (1). 20 S. Am., E. Austr.
Phrygiobureaua O. Ktze. = *Phryganocydia* Mart. (Bignon.).
Phryma L. Phrymaceae. 1 E. As., N. Am. Herb with opp. l. and small axillary fls., ♂. Cpl. 1 with one erect orthotr. ov.
Phrymaceae (EP.; *Verbenaceae* p.p. BH.). Dicots. (Sympet. Tubiflorae). Only gen. *Phryma*, q.v.; the chief distinction from *Verbenaceae* is the erect orthotr. ovule; no transitions between this and other V.
Phrynium Loebl. Marantaceae. 12 Indomal.
Phtheirospermum Bunge. Scrophulariaceae (III. 3). 4 E. As.
Phthirusa Mart. (*Loranthus* p.p. BH.). Loranth. (1). 35 trop. Am.
Phuodendron Graebn. Valerianaceae. 1 Brazil.
Phuopsis Benth. et Hook. f. Rubiaceae (II. 11). 1 Caucasus.
Phycella Lindl. = *Hippeastrum* Herb. p.p. (Amaryll.).
Phygelius E. Mey. Scrophulariaceae (II. 4). 2 S. Afr. Cult. orn. fl.
Phyla Lour. (*Lippia* p.p.). Verbenaceae (1). 6 N. Am.
Phylacium Bennett. Leguminosae (III. 7). 1 Malay Archipelago.
Phylica L. Rhamnaceae. 70 S. Afr., Madag., &c. Mostly xero. shrubs, often of heath-like habit with l. rolled back (cf. *Empetrum*).
Phyllacantha Hook. f. Rubiaceae (1. 8). 1 Cuba.
Phyllachne Forst. Stylidiaceae. 9 Tasm., N.Z., S. Am.
Phyllactinia Benth. (*Pasaccardoa* EP.). Compositae (12). 1 trop. Afr.
Phyllactis Pers. (*Valeriana* p.p. EP.). Valerian. 25 Mexico, S. Am.
Phyllagathis Blume. Melastomaceae (1). 5 S.E. As.
Phyllanthera Blume. Asclepiadaceae (1). 2 Malay Penins., Java.
Phyllanthodendron Hemsl. (*Phyllanthus* p.p. EP.). Euphorbiaceae (A. I. 1). 2 Siam.
Phyllanthus L. Euphorbiaceae (A. I. 1). 460 temp. and trop., exc. Eur. and N. As. The trop. Am. § *Xylophylla* has flat green phylloclades bearing fls. on the margins. The ultimate shoots in § *Euphyllanthus* look like pinnate l. In *P. cyclanthera* Baill. the ♂ fl. has its 3 sta. united into a synandrium with ring-like anther at top.

Phyllarthron DC. Bignoniaceae (4). 6 Madag., Mascarenes. The l. is reduced to a jointed winged petiole.

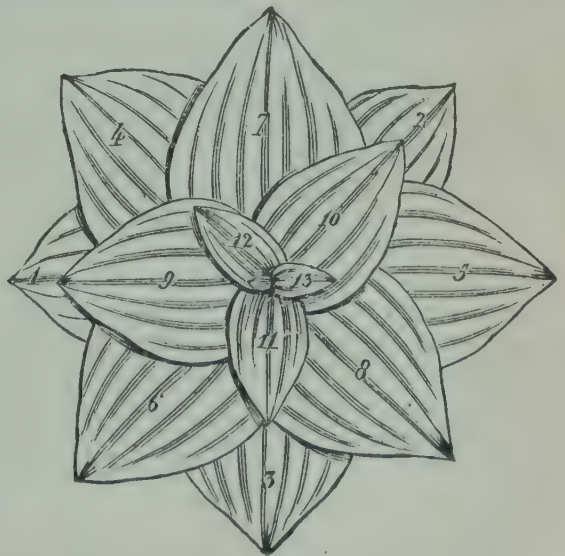
Phyllepidum Rafin. Amarantaceae (inc. sed.). Gen. dubium. 1 N. Am.

Phyllis L. Rubiaceae (II. 7). 1 Canaries, Madeira.

Phyllitis Ludwig. Polypodiaceae. 10 trop. and subtrop.

Phyllo- (Gr. pref.), **-phyllous** (suff.), leaf; **-clade**, a stem structure usu. $\pm$ flattened and serving l. purposes, *Asparagus*, *Baccharis*, *Bos-siaca*, *Carmichaelia*, *Hibbertia*, *Lathyrus*, *Lemna*, *Muehlenbeckia*, *Oxalis*, *Phyllanthus*, *Phyllocladus*, *Ruscus*, *Semele*; **-de**, a petiole flattened and green, taking over l.-functions, *Acacia*, *Oxalis*; **-dy**, change of fl. organs to l.; **-me**, a leaf structure; **-taxy**, the arrangement of the l. upon the stem. It follows definite rules, esp. in flowering-plants, though it varies within certain narrow limits. The l. may be several at each node (in *whorls*), or two (usu. *opposite*), or one (*alternate*). When the stem is so short that the l., as in the primrose or dandelion, are all crowded together and spring from the level of the ground, they are said to be '*radical*.' In the first two cases the l. at one node usu. stand above the gaps at the node below. In the case of alt. l. there is found to be a fairly constant angle between each l. and the next one above it, e.g. in *Plantago* (fig.) this angle is $\frac{3}{8}$ of the whole circumference measured the nearest way.

This fraction $\frac{3}{8}$ represents the phyllotaxy. Twisting excepted the l. will stand in 8 vertical rows, each divided from the next by $\frac{1}{8}$ of the circumference. Leaf 2 will be $\frac{3}{8}$, 3 will be $\frac{6}{8}$, 4 will be $\frac{2}{8}$, 5 will be $\frac{5}{8}$, 6 will be $\frac{1}{8}$, 7 will be $\frac{4}{8}$, 8 will be $\frac{7}{8}$, and 9 will be $\frac{2}{8}$, of the circumference from leaf 1, i.e. immediately over it, and three turns of the spiral above it. Hence the rule for determining phyllotaxy: start from any l. A and draw a spiral round the stem, passing by the nearest way through



$\frac{3}{8}$ PHYLLOTAXY.

all consecutive l. to the l. B exactly above A; then the number of l. from A to B is the denominator, the number of turns of the spiral the numerator, of the fraction representing the phyllotaxy.

In Gramineae the phyllotaxy is $\frac{1}{2}$, i.e. alt. on opp. sides of the stem, in Cyperaceae $\frac{1}{3}$. Nearly all other actual arrangements are terms of the continued fraction starting from $\frac{1}{2}$, $\frac{1}{3}$. If we add the numerators together to make a new numerator, and treat the denominators in the same way, we get the next arrangement $\frac{2}{3}$. This with $\frac{1}{3}$ gives $\frac{3}{8}$, and then $\frac{5}{8}$ and so on. It is rare to find a stem that shows

the phyllotaxy very clearly; usually in the course of growth more or less twisting occurs (*cf.* Pandanaceae). The benefit of the phyllotaxy is that the leaves are spread out to occupy the available space to advantage.

Phyllotaxies of these types give shoots of radial symmetry; there are also bilateral arrangements, esp. upon horizontal shoots. Sometimes the dorsiventrality is attained by the twisting of the leaf-stalks from the positions in which they arose, but more commonly there is a more or less two-ranked (*distichous*) phyllotaxy, the l. arising upon the sides of the axis, and merely having to twist at their bases to place themselves horizontally; *e.g.* in the yew (*Taxus*), lime (*Tilia*), *Abies*, *Anona*, *Betulaceae*, *Pinus*, *Ulmus*, &c.

In other plants, again, alterations of phyllotaxy occur for which no explanation can be given; *e.g.* in *Baptisia*, *Eucalyptus*, *Nolana-ceae*, *Quisqualis*, *Solanaceae*, *Thelygonum*, &c.

Phylloboea Benth. *Gesneriaceae* (1). 2 Further India, China.

Phyllobotrium Muell.-Arg. *Flacourtiaceae* (10). 1 Gaboon.

Phyllocactus Link. (*EP. incl. Epiphyllum* p.p.). *Cactaceae* (III. 1). 16 trop. Am., W.I., often epiphytic. Flat-stemmed plants (see fam.).

Phyllocalyx Berg. = *Eugenia* Mich. p.p. (*Myrt.*).

Phyllocarpus Riedel ex Endl. *Leguminosae* (II. 8). Rio de Janeiro.

Phyllochlamys Bur. in DC. *Moraceae* (1). 1 Indomal.

Phyllocladus Rich. *Coniferae* (*Taxaceae*, 6; see C. for gen. char.). 6 Tasm., N.Z., Borneo (celery pine). The 'short shoots' are represented by flat green leaf-like structures—*phylloclades*—whose stem-nature is easily recognized by their position in the axils of the scale l. on the 'long shoots.' The edges of the *phylloclades* also bear scales. The fls. (mon- or di-oec.) occupy the position of *phylloclades*. Each cpl. has one axillary erect ovule. The seed has a small basal aril. The timber is useful: the bark of *P. trichomanoides* D. Don is used for tanning.

Phylloclinium Baill. *Flacourtiaceae* (10). 1 Congo.

Phyllocomos Mast. *Restionaceae*. 1 S. Afr.

Phyllocosmus Klotzsch (*Ochthocosmus EP.*). *Linaceae*. 5 trop. Am., Afr.

Phyllocrater Wernham. *Rubiaceae* (1. 2). 1 Borneo.

Phylloctenium Baill. *Bignoniaceae* (4). 1 Madag.

Phyllodes Lour. = *Phrynium* Loefl. (*Marant.*).

Phyllodium Desv. = *Desmodium* Desv. (*Legum.*).

Phyllodoce Salisb. (*Bryanthus BH.*). *Ericaceae* (1. 3). 10 N. circumpolar and temp.

Phylloglossum Kunze. *Lycopodiaceae*. 1 Austr. and N.Z., *P. Drummondii* Kunze. The embryo forms a protocorm (see fam.), which produces a crown of sterile l. and a short unbranched stem, bearing at its apex a single cone of sporangia, like the cone of *Lycopodium*. "At the end of the growing season a new protocorm is formed. This arises directly from the apex of the old one where no strobilus is developed, but in the latter case grows out upon a sort of peduncle from near the base of one of the l." (Campbell). Prothallus subterranean. [Cf. Wernham in *Ann. Bot.* 1910, p. 335.]

Phyllogonum Coville. *Hydnoraceae*. 1 California.

Phylломelia Griseb. *Rubiaceae* (II. 4). 1 Cuba.

- Phyllonoma** Willd. ex Schult. Saxifrag. (v). 1 Mex. to Colombia.
Phyllophiorrhiza O. Ktze. = *Ophiorhizophyllum* S. Kurz (Acan.).
Phyllopodium Benth. Scrophulariaceae (II. 5). 15 S. Afr.
Phyllorhachis Trimen. Gramineae (5). 1 Angola.
Phylloscirpus C. B. Clarke. Cyperaceae (1). 1 Argentina.
Phyllosma Bolus. Rutaceae (1). 1 S. Afr.
Phyllospadix Hook. Potamogetonaceae. 2 W. coast N. Am., Japan.
 Dioecious.
Phyllostachys Sieb. et Zucc. Gramineae (13). 6 Japan to Himalaya.
 The stripped stems are Whangee canes.
Phyllostegia Benth. Labiatae (III). 17 Hawaii, Tahiti.
Phyllostylon Capanema ex B. et H. f. Ulmaceae. 1 Rio, 1 Paraguay,
 1 Cuba. Cf. *Cryptotaenia*. Good timber.
Phyllota Benth. Leguminosae (III. 2). 10 Austr.
Phyllotrichum Thorel ex Lecomte. Sapind. (inc. sed.). 1 S.E. As.
Phylloxera, the root and leaf louse of the vine (*Vitis*).
Phylloxylon Baill. Leguminosae (III. 8). 2 Madag., Mauritius.
Phylogeny, line of descent from other forms.
Phylon (Gr.), line of descent.
Phymaspermum Less. Compositae (7). 5 Cape Colony.
Phymatidium Lindl. Orchidaceae (II. 19). 2 Brazil.
Phymatocarpus F. Muell. Myrtaceae (II. 1). 2 W. Austr.
Phymatodes Presl = *Polypodium* L. (Polypod.).
Physacanthus Benth. Acanthaceae (IV. A). 3 W. trop. Afr.
Physaliastrum Makino (*Chamaesaracha* p.p.). Solan. (2). 2 Japan.
Physalidium Fenzl. Cruciferae (2). 1 Persia.
Physalis L. Solanaceae (2). 50 cosmop. The berry of *P. Alkekengi*
 L. (winter cherry) is edible, also that of *P. peruviana* L. (strawberry
 or gooseberry tomato, or cape gooseberry). It is enclosed in the
 bladdery persistent calyx, which becomes red.
Physaria A. Gray. Cruciferae (3). 6 Pac. N. Am.
Physedra Hook. f. Cucurbitaceae (3). 5 trop. W. Afr.
Physena Nor. ex Thou. Flacourtiaceae (inc. sed.). 2 Madag.
Physic-nut, *Jatropha Curcas* L.
Physocalymma Pohl. Lythraceae. 1 trop. S. Am. Timber valuable.
Physocalyx Pohl. Scrophulariaceae (III. 2). 2 Brazil.
Physocarpus Maxim. (-pa Rafin.) (*Neillia* BH.). Rosaceae (I. 1).
 3 N. Am., N.E. As.
Physocaulis Tausch (*Chaerophyllum* p.p. BH.). Umbelliferae (III. 2).
 1 Medit.
Physochlaina G. Don. Solanaceae (2). 5 C. As.
Physodium Presl. Sterculiaceae. 2 Mexico.
Physoleucas Jaub. et Spach (*Leucas* p.p. BH.). Labi. (VI). 1 Arabia.
Physolobium Benth. = *Kennedyia* Vent. p.p. (Legum.).
Physopodium Desv. Lythraceae. 1 Bourbon.
Physopsis Turcz. Verbenaceae (3). 1 W. Austr.
Physoptychis Boiss. (*Vesicaria* BH.). Cruciferae (4). 1 Persia.
Physorrhynchus Hook. Cruciferae (2). 2 Persia, Afghanistan.
Physosiphon Lindl. Orchidaceae (II. 8). 5 trop. Am. Cult. orn. fl.
Physospermum Cusson. Umbelliferae (III. 4). 5 Eur.
Physostegia Benth. Labiatae (VI). 5 N. Am.

- Physostelma** Wight. Asclepiadaceae (II. 3). 2 Malaya.
- Physostemon** Mart. (*Cleome* p.p. *BH.*). Capparid. (v). 4 trop. S. Am.
- Physostigma** Balf. Leguminosae (III. 10). 2 trop. Afr. The keel is spurred. *P. venenosum* Balf. is the ordeal bean of Calabar.
- Physotrichia** Hiern. Umbelliferae (III. 5). 2 trop. Afr.
- Physurus** L. C. Rich. Orchidaceae (II. 2). 25 warm As., Am.
- Phyt-, Phyto-** (Gr. pref.), plant-; **-logy**, botany.
- Phytelephas** Ruiz et Pav. Palmae (v). 4 trop. Am. Like Nipa, widely different from other palms; with affinities to Pandanaceae and Cyclanthaceae. Short-stemmed with large pinnate rad. l., and dioec. infls. ♂ infl. a sausage-shaped spadix; the fl. has an irreg. P and ∞ sta. with long filaments. ♀ spadix simple with spathe of several l., and about 6 fls.; the fl. has an irreg. P (an outer whorl of 3 and inner of 5—10 longer l.), numerous stds. and usu. a 5-loc. ov. with long style and stigmas. Each fl. gives a berry, and the actual fr. consists of 6 or more of these united together. The outer coat is hard, with woody protuberances. Each partial fr. contains several seeds; the endosp. (cellulose) is very hard (vegetable-ivory) and is used for turning into billiard balls, &c. [Compare this fr. with Pandanus and Carludovica.]
- Phyteuma** L. Campanulaceae (I. 1). 45 Medit., Eur., As. *P. orbiculare* L. and *P. spicatum* L. (rampion) in Brit. Fl. mech. interesting (see fam.). The fls. are small, and massed together in heads. A tube is formed by the coherence of the tips of the long thin petals, within which the anthers are held. The style pushes up through this and drives the pollen gradually out at the end, where it is exposed to insects. Finally the style emerges, the stigmas open and the petals separate and fall back. [Compare with Campanula, Jasione and Compositae.]
- Phytocrene** Wall. Icacinaceae. 7 Indomal. Twining shrubs with very large vessels in the stem. If the stem be cut a quantity of water escapes, which is drunk by the Malabar natives. Fls. dioec.
- Phytolacca** Tourn. ex L. (incl. *Pircunia* Bert.). Phytolaccaceae. 26 trop. and subtrop. Herbs with fleshy roots, or shrubs or trees. Fls. reg.; P 5, A 10—20, G 7—10 or (7—10); in the latter case fr. a berry, in the former an aggregate of achenes or drupes.
- Phytolaccaceae** (*EP.*, *BH.*). Dicots. (Archichl. Centrospermae; Curvembryae *BH.*). 20 gen., 60 sp., chiefly trop. Am. and S. Afr. Herbs, shrubs, or trees, with racemose or cymose infls. of regular inconspic. ♀ fls. P 4—5, A 4—5 or more (to ∞), G, rarely $\bar{G}$, 1— ∞ or (1— ∞), ovules 1 in each cpl., ampli- or campylo-tropous. Drupe or nut, rare capsule. Seed with perisperm, often arillate. The fls. exhibit great variety in structure, owing to branching of sta. and different numbers and arrangements of cpls. *Chief genera*: Seguiera, Rivina, Phytolacca
- Phytosalpinx** Lunell = *Lycopus* Tourn. (Labi.).
- Piaranthus** R. Br. Asclepiadaceae (II. 3). 12 S. Afr.
- Piassaba fibre**, *Attalea funifera* Mart. (Bahia), *Leopoldinia Piassaba* Wallace.
- Picardaea** Urb. Rubiaceae (I. 1). 1 Haiti.
- Picconia** DC. (*Notelaea* p.p.). Oleaceae. 1 Canaries, Madeira.

Picea Link. *Synonymy*: *P. vulgaris* Link (*Pinus Abies* L.) = *P. excelsa* Link; *P. canadensis* Link = *Tsuga canadensis*; *P. Pinsapo* Loud. = *Abies Pinsapo*; *P. rubra* A. Dietr. = *P. nigra* Link.

Coniferae (Pinaceae 13; see C. for gen. char.). 35 *. Long shoots only with needle l. Fls. single. Cones ripening in one year. *P. excelsa* Link, the Norway spruce or spruce-fir, found in Eur. from the Pyrenees to 68° N., furnishes valuable wood, resin, and turpentine. *P. alba* Link (silver fir, N. Am.), *P. Morinda* Link (Himalayan spruce), and others are also valuable.

Pichleria Stapf et Wettst. Umbelliferae (III. 5). 2 Persia.

Pichonia Pierre (*Epiluma* p.p. *EP.*). Sapotaceae (I). 2 New Caled.

Pickereel weed (Am.), *Pontederia*.

Pickeringia Nutt. ex Torr. et Gray. Legumin. (III. 2). 1 Calif.

Picotée, var. of carnation, *Dianthus Caryophyllus* L.

Picradenia Hook. (*Actinella* p.p.). Compositae (6). 20 N. Am.

Picradeniopsis Rydberg (*Bahia* p.p.). Compositae (6). 1 N. Am.

Picraena Lindl. (*Picrasma* p.p. *EP.*). Simarubaceae. 2 W.I., Brazil.

Picralima Pierre. Apocynaceae (I. 3). 1 Gaboon.

Picramnia Sw. Simarubaceae. 30 trop. Am., W.I.

Picrasma Blume. Simarubaceae. 8 trop. and subtrop. The bitter wood and bark are used as a substitute for quassia.

Picrella Baill. Simarubaceae. 1 Mexico.

Picridium Desf. (*Reichardia EP.*). Compositae (13). 10 Medit.

Picris Linn. Compositae (13). 36 Medit., W. As., Abyss. 2 in Brit.

Picrocardia Radlk. Simarubaceae. 1 New Caled.

Picrodendron Planch. Simarubaceae. 1 W.I.

Picrolemma Hook. f. Simarubaceae. 1 Amazonas.

Picrorrhiza Royle ex Benth. Scrophulariaceae (III. 1). 1 Himal.

Picrosia D. Don. Compositae (13). 1 warm S. Am.

Pictetia DC. Leguminosae (III. 7). 6 W.I., Mexico.

Pictus (Lat.), coloured.

Piddingtonia A. DC. = *Pratia* Gaudich. (Campan.).

Pierardia Roxb. = *Baccaurea* Lour. p.p. (Euph.).

Pieris D. Don (*Lyonia* p.p. *EP.*). Ericaceae (II. 1). 10 N. Am., E. As.

Pierrea Hance. Dipterocarpaceae. 1 Malaya.

Pierreanthus Bonati = *Delpya* Pierre (Scroph.).

Pierreodendron Engl. Simarubaceae. 1 trop. Afr.

Pierrina Engl. Scyttopetalaceae. 2 trop. Afr.

Pig lily (Afr.), *Zantedeschia*; - **nut** (Am.), *Carya porcina* Nutt., (W.I.)

Omphalea; - **weed** (Am.), *Chenopodium*; - **s balsam**, *Hedwigia*.

Pigafettia Becc. Palmae (III). 3 Malay Archipelago.

igea DC. = *Ionidium* Vent. (*BII.*) = *Hybanthus* Jacq. (Viol.).

Pigeon berry (Am.), *Phytolacca*; - **pea**, *Cajanus indicus* Spreng.

Pignons, ed. seeds of *Pinus Pinea* L.

Pilea Lindl. Urticaceae (2). 140 trop., cult. (artillery plant), so called from the puffs of pollen ejected by the exploding sta. (*cf.* *Urtica*).

Pileanthus Labill. Myrtaceae (II. 2). 3 W. Austr.

Pileostegia Hook. f. et Thoms. Saxifragaceae (III). 1 S. E. As.

Pileus Ramirez. Passifloraceae. 1 Mexico.

Pilewort, *Ranunculus Ficaria* L.

Piliferous, hair-bearing.

- Piliocalyx** Brongn. et Gris. Myrtaceae (1). 4 New Caledonia.
- Pillansia** L. Bolus. Iridaceae (III). 1 S. Afr.
- Pillar roots**, cf. Aerial roots.
- Pillwort**, *Pilularia*.
- Pilocarpus** Vahl. Rutaceae (1). 12 trop. Am., W.I. The leaves of *P. pennatifolius* Lem. are the officinal 'folia Jaborandi.'
- Pilocereus** Lem. (*Cereus* p.p. *BH.*). Cactaceae (III. 1). 50 Mex., S. Am.
- Pilogyne** Schrad. = *Melothria* L. p.p. (Cucurb.).
- Pilophyllum** Schlechter (*Chrysoglossum* p.p.). Orchidaceae (II. a. 11). 2 Java, New Guinea.
- Pilose**, with soft scattered hairs.
- Pilosella** (Rupp.) Sch.-Bip. = *Hieracium* Tourn. p.p. (Comp.).
- Pilosperma** Planch. et Triana. Guttiferae (v). 1 Colombia.
- Pilostigma** Costantin. Asclepiadaceae (II. 1). 1 Indochina.
- Pilostyles** Guill. (*Apodanthes* p.p. *BH.*). Rafflesiaceae. 8 S. Am. to W. As. Parasites on Leguminosae.
- Pilouratea** Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 2 Brazil.
- Pilularia** L. Marsiliaceae. 6 N. and S. temp. *P. globulifera* L., the pill-wort, on the margins of lakes in Brit. Creeping rhiz. bearing roots on the lower surface and linear erect l. on the upper. The pea-shaped sporocarp, borne on the ventral side of a l.-stalk, has a hard outer coat and consists of four sori, each containing micro- and mega-sporangia. Life history like Marsilia.
- Pilumna** Lindl. = *Trichopilia* Lindl. (Orchid.).
- Pimelandra** A. DC. (*Ardisia* p.p.). Myrsinaceae (II). 7 Indomal.
- Pimelea** Banks et Soland. Thymelaeaceae. 80 Austr., Tasm., N.Z., Timor. Fls. in heads, protandrous. Cult. orn. fl.
- Pimeleodendron** Hassk. Euphorbiaceae (A. II. 7). 3 Malay Archip.
- Pimenta** Lindl. Myrtaceae (1). 5 trop. Am., W.I. The unripe fr. of *P. officinalis* Lindl., rapidly dried, form allspice.
- Pimentelea** Wedd. Rubiaceae (I. 5). 1 Peru.
- Pimento**, *Pimenta officinalis* Lindl.
- Pimia** Seem. Sterculiaceae. 1 Fiji.
- Pimpernel**, *Anagallis arvensis* L.; yellow -, *Lysimachia nemorum*.
- Pimpinella** (Riv.) L. Umbelliferae (III. 5). 100 * and S. Afr. 2 in Brit., incl. *P. Saxifraga* L. (burnet-saxifrage). *P. Anisum* L. (Medit., anise), fr. (aniseed) are used in flavouring.
- Pin-eyed** (in *Primula*, &c.), long-styled.
- Pinaceae**, see *Coniferae*.
- Pinanga** Blume. Palmae (IV. 1). 50 Indomal.
- Pinaropappus** Less. Compositae (13). 1 Texas, Mexico.
- Pinarophyllon** T. S. Brandege. Rubiaceae (I. 8). 1 Mexico.
- Pinaster**, *Pinus Pinaster* Ait.
- Pinckneya** Michx. Rubiaceae (I. 1). 1 S. U.S. Cinchonin in bark.
- Pindarea** Barb. Rodr. Palmae (IV. 2). 2 Brazil.
- Pinder** (W.I.), ground nut, *Arachis hypogaea* L.
- Pine**, *Pinus*; -apple, *Ananas sativus* Schult.; Bhotan -, blue -, *Pinus excelsa* Wall.; Bunya-Bunya -, *Araucaria Bidwilli* Hook.; celery -, *Phyllocladus*; cluster -, *Pinus Pinaster* Ait.; Corsican -, *Pinus Laricio* Poir.; cypress -, *Callitris*; digger -, *Pinus Sabina* Dougl.; frank-

incense -, *Pinus Taeda* L.; **golden** -, *Pseudolarix*; **hoop** -, *Araucaria Cunninghamii* Ait.; **huon** -, *Dacrydium Franklinii* Hook. f.; **loblolly** -, *Pinus Taeda* L.; **Norfolk Island** -, *Araucaria excelsa* R. Br.; **Oregon** -, *Pseudotsuga Douglasii* Carr.; **parasol** -, *Sciadopitys*; **pitch** -, *Pinus palustris* Mill., &c.; **-sap** (Am.), *Monotropa*; **screw** -, *Pandanus*; **stone** -, *Pinus Pinea* L.; **sugar** -, *Pinus Lambertiana* Dougl.; **Weymouth** -, *Pinus Strobilus* L.; **wild** - (W.I.), *Tillandsia*; **yellow** -, *Pinus echinata* Mill.

Pineda Ruiz et Pav. (*Banara* p.p. *BH.*). Flacourt. (5). 3 N.W. S. Am.

Pinelea Lindl. (*Restrepia* p.p. *EP.*). Orchid. (II. 8). 1 Brazil.

Pinellia Tenore. Araceae (VII). 3 Japan, China. Cult.

Piney varnish, *Vateria indica* L.

Pingerin, pinguin (W.I.), *Bromelia Pinguin* L.

Pinguicula Tourn. ex L. Lentibulariaceae. 30 N. extra-trop., Andes, Antarctic zone; 3 in Brit. (butterwort), incl. *P. vulgaris* L. It has a rhiz. with a rosette of rad. l. arranged in $\frac{2}{3}$ phyllotaxy. The l. are covered with glands, some sessile, some on stalks, secreting a sticky fluid to which small insects adhere. Rain washes them against the edge of the l., which is slightly upturned: when stimulated by the presence of proteid bodies it rolls over upon itself and encloses them, and then the sessile glands secrete a ferment, digest the prey, and absorb the products, after which the l. unrolls again. *P. lusitanica* L. is found on the western shores of Brit. and is one of a few sp. which have migrated thus far up the Atl. coasts (common in Portugal).

Pinillosia Ossa in DC. Compositae (5). 2 Cuba.

Pink, *Dianthus*, esp. *D. monspessulanus* L.; **Cheddar** -, *D. caesioides* Sm.; **Chinese** -, *D. chinensis* L.; **clove** -, *D. caryophyllus* L.

Pinna, leaflet of a pinnate l.; **pinnate**, cpd., leaflets on either side of stalk, like a feather; **pinnatifid**, **-partite**, **-sect**, pinnately notched to $\frac{1}{4}$ — $\frac{1}{2}$, $\frac{1}{2}$ — $\frac{3}{4}$, $> \frac{3}{4}$ depth.

Pintoa C. Gay. Zygophyllaceae. 1 Chili.

Pinus (Tourn) L. *Synonymy*: *P. Abies* L. (*P. excelsa* Lam.) = *Picea excelsa*; *P. alba* Ait. = *Picea alba*; *P. balsamea* L. = *Abies balsamea*; *P. Cedrus* L. = *Cedrus Libani*; *P. Douglasii* Lamb. = *Pseudotsuga Douglasii*; *P. Larix* L. = *Larix europaea*; *P. maritima* Lam. = *P. Pinaster*; *P. nigra* Ait. = *Picea nigra*; *P. Picea* L. = *Abies pectinata*.

Coniferae (Pinaceae 18: see C. for gen. chars.). 70 N. temp. and on Mts. in the N. trop. Evergr., resinous trees with both long and short shoots (see Coniferae). If a tree be examined in winter the main axes will be found each with a group of buds at the end, one term., the rest lat., covered with resinous scale l. Each gives rise in spring to a 'long shoot' or shoot of unlimited growth; the term. bud continues the main axis of all, forming a year's growth before branching in a similar way again. The large branches thus form rough whorls marking each year's growth. On the stem of a long shoot no green l. are directly borne, but only scales, first the bud scales above mentioned and then others in whose axils arise the 'short shoots,' or shoots of limited growth. Each of these has a few scale l. at the base of a very short stem and ends with 2 or more green l. of needle shape. When there are two, their upper flat sides face one another. These needle l. exhibit xero. characters; they are thick in proportion to surface exposed, they

have a very stout epidermis with a hypoderm of thick walled tissue under it, and the stomata are placed at the bottom of deep pits; the intercellular spaces too are very small.

The fls. take the form of the familiar cones, the ♂ grouped together in spikes. Each fl., whether ♂ or ♀, occupies the position of a short shoot and is of limited growth—an axis with a few scale-l. below bearing a number of sporophylls. In the ♂ there are many sta., each with two pollen-sacs on the under side; the pollen is loose and powdery, and each grain has two bladdery expansions of the cuticle helping it to float in the air. In the ♀, the cpls. are very small, but the ovuliferous scales, which show at the outside of the cone, are very large, and each bears two ovules at its base, with the micropyles facing the axis. The ♀ cones take 2 to 3 years before the seeds are ripe. In May of the first year, the first stage may be seen—young cones, about 1 cm. long, in the position of short shoots near the tip of the lengthening axis. The ovules are not ripe for fert. In June (the time varies from year to year according to season) pollination takes place. The ♂ cones shed their pollen in great quantities, so that in a pine forest the air is often full of it (if it rain, the phenomenon of 'showers of sulphur' may occur), and the wind carries it about. At the same time the ovuliferous scales spread apart. If a grain fall between two of them it slips down to the micropyle of an ovule, where it becomes held by the sticky fluid then exuding. After a short time the ♀ cones close up again. The pollen grain is brought into contact with the nucellus by the drying up of the mucilage; it forms a short pollen-tube, and then a resting period comes on. Next year in May or June the ♀ cone has become a fat green body about 3 cm. long, with the ovules ready for fert.; the pollen-tubes now recommence growth and reach the ova. Then in the third year the cone is mature—a hard woody cone containing the seeds between the scales. Each seed contains an embryo with a whorl of cots., embedded in rich endosp., and has a hard testa. To the end of this is attached a thin membranous wing, derived from the ovuliferous scale. In dry weather the cone opens and the seeds are blown away. In germ. the seed is lifted up above the earth by the growing plant and the cots. remain inside the testa till the reserves are exhausted. They are green whilst in the seed, though in darkness—an exception to the rule that chlorophyll requires light for its formation. During the first year no short shoots are formed, and the seedling has green l. borne directly on the main stem.

The pines are amongst the most valuable of all plants and are cultivated on an enormous scale, chiefly for their timber, which is easily worked, and resinous products. The resin renders the timber very resistant to decay, &c. Some of the more important sp. will now be mentioned. (Cf. also under Pine.)

I. *PINASTER* Endl. Visible part of fruit scale more or less pyramidal with central boss.

§ 1. *Pinea* (short shoot with 2 or rarely 1 needles): 20 sp.
P. sylvestris L., the Scotch fir, the only Brit. sp., occurs in Eur. to 68° N., in Asia to 66° N., and as far south as Spain and Italy (alpine). The wood (yellow deal) is largely used in the arts; turpentine is obtained by tapping the tree.

The resin exudes and is distilled; the distillate is oil of turpentine, the remainder rosin. Tar and pitch are correspondingly the products of destructive distillation in closed chambers. *P. Pumilio* Haenke (*P. montana* Mill.) is a shrubby decumbent sp., Pyrenees to Caucasus. *P. Pinea* L. (Medit.), the stone pine, furnishes edible seeds ('pignons'). *P. Laricio* Pour. (S. Eur.) is the Corsican pine. *P. Pinaster* Ait., the cluster pine or pinaster (Medit.), is a valuable tree. It grows well near the sea, and large areas of the Landes of S. France are planted with it. It furnishes much of the turpentine &c. in use. *P. echinata* Mill. the short leaved or yellow pine is a valuable N. Am. sp. *P. longifolia* Roxb. (Himal.) is tapped for resin.

- § 2. *Taeda* (needles 3, triangular in section): 16 sp. *P. Taeda* L. (loblolly or frankincense pine, southern U.S.) yields turpentine. *P. palustris* Mill. (*P. australis* Michx.) (pitch-pine, U.S.) yields timber and turpentine. Other sp., e.g. *P. ponderosa* Dougl. and *P. rigida* Mill., are also known by the name of pitch-pine.

II. *STROBUS* Spach. Visible part of fruit scale with terminal boss. Needles usually 5 in each short shoot. 20 sp.

- § 1. *Eustrobus* (cones hanging, seeds winged): *P. Strobis* L., the Weymouth or white pine (East N. Am.), a timber tree; *P. Lambertiana* Dougl., the giant sugar pine of the W. U.S.; *P. excelsa* Wall., the Bhutan or blue pine (E. India).
 § 2. *Cembra* (cones erect or drooping, seeds not winged); *P. Cembra* L. the Siberian cedar (Alps, Carpathians, Ural, Siber.) has ed. seeds and valuable wood; *P. flexilis* James (N. Am.) &c. [For further details see *Nat. Pl.*, Veitch's *Manual of Coniferae*, *European pine timbers* in Kew Bull. 1915, p. 265, &c.]

Pinweed, *Lechea*.

Pinxter-fl. (Am.), *Azalea nudiflora* L.

Pionandra Miers = *Cyphomandra* Mart. (Solan.).

Pionocarpus Blake (*Helianthella* p.p.). Compositae (5). 1 Mexico.

Piper L. (BH. incl. *Chavica* Miq.). Piperaceae. 700 trop. mostly climbing shrubs (peppers). Fls. in sympodial spikes, the bracts closely appressed to the axis. Fr. a berry. That of *P. nigrum* L., gathered before ripe and dried, forms a black peppercorn; or if the outside be removed by maceration, a white one. Pepper is chiefly cult. in Malaya. *P. Cubeba* L. f. is the cubebs, *P. Betle* L. the betel pepper (see *Arca*). See *Treas. of Bot.*

Piperaceae (EP., BH. incl. *Saururaceae* and *Lactoridaceae*). Dicots. (Archichl. Piperales; Micrembryae BH.). 7 gen. with 1150 sp. trop. Plants of simple organisation. Herbs or shrubs with undivided l. with or without stipules; the l. have a pungent taste. Fls. naked, in spikes. A 1—10, G (1—4), 1-loc. with 1 basal orthotr. ov. Seeds with dense perisperm round the endosp.; embryo small. The stem-anatomy is interesting. Piper is economically useful. *Chief genera*: Piper, Peperomia. [BH. chars. incl. those of S. and L., esp. parietal plac., and > 1 ov.]

Piperales. The 2nd order of Archichlamydeae.

- Piperia** Rydberg (*Habenaria* p.p.). Orchidaceae (II. 1). 10 N. Am.
Pipe vine (Am.), *Aristolochia Sipho* L'Hérit.; -wort, *Elatine*, *Eriocaulon*.
Piptadenia Benth. Leguminosae (I. 5). 45 trop., esp. Am. *P. rigida*
 Benth. (Brazil) yields Angico gum, used like gum-arabic.
Piptanthocereus Riccob. (*Cereus* p.p.). Cactaceae (III. 1). 10 Argentin
 a to Mexico.
Piptanthus Sweet. Leguminosae (III. 2). 2 Himalaya, China.
Piptatherum Beauv. = *Oryzopsis* Michx. p.p. (Gram.)
Piptocalyx Oliv. ex Benth. Monimiaceae. 1 New S. Wales.
Piptocalyx Torr. (*Krynitzkia* p.p. *BH.*, *Greeneocharis* p.p. *EP.*). Bora-
 ginaceae (IV. 2). 2 Pac. N. Am.
Piptocarpha R. Br. Compositae (I). 30 trop. Am.
Piptocelus C. Presl. Inc. sed. 1 Ecuador.
Piptochaetium J. Presl (*Oryzopsis* p.p. *BH.*). Gramin. (8). 10 temp. S. Am.
Piptocoma Cass. Compositae (I). 1 S. Domingo.
Piptolepis Sch.-Bip. Compositae (I). 8 Minas Gerães.
Piptoptera Bunge. Chenopodiaceae (B). 1 Turkestan.
Piptosaccos Turcz. Inc. sed. 1 Malaya.
Piptospatha N. E. Br. Araceae (v). 8 Malaya.
Piptostigma Oliv. Anonaceae (2). 4 W. Afr.
Piptothrix A. Gray. Compositae (2). 3 Mexico.
Pipturus Wedd. Urticaceae (3). 8 Mascarenes to Australia.
Pipul (peepul) *Ficus religiosa* L.
Piqueria Cav. Compositae (2). 15 Bolivia to Mexico.
Piranhea Baill. Euphorbiaceae (A. I. 1). 1 Brazil.
Piratinera Aubl. = *Brosimum* Sw. (Morac.)
Pircunia Bert. = *Phytolacca* L. (Phytol.)
Pirea Durand (*Dictyosperma* p.p.). Cruciferae (2). 1 W. As.
Pirigara Aubl. = *Gustavia* L. (Lecythid.)
Piriqueta Aubl. Turneraceae. 25 warm Am., Afr., Madag.
Pirola Neck. = *Pyrola* Tourn. (Pyrol.)
Pirolaceae = *Pyrolaceae*.
Pironneauella O. Ktze. = *Streptocalyx* Beer. (Bromel.)
Pironneava Gaudich. (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 3 Brazil.
Pirus Hall. = *Pyrus* Tourn. (Ros.)
Pisang, *Musa paradisiaca* L.
Piscaria Piper (*Eremocarpus* *BH.*). Euphorb. (A. II. 1). 1 N.W. U.S.
Piscidia L. Leguminosae (III. 8). 1 Florida, Mexico, W.I.
Pisiform, pea-shaped.
Pisonia Plum. ex L. Nyctaginaceae. 50 trop. Fls. usu. unisexual.
 The anthocarp is glandular and is one of the few fr. which are able
 to cling to feathers. On Keeling Island they adhere to herons in such
 quantities as sometimes to cripple them.
Pisoniella Heimerl (*Pisonia* p.p.). Nyctaginaceae. 1 warm Am.
Pisoniella Standley (*Boerhaavia* p.p.). Nyctagin. 2 warm Am.
Pisosperma Sond. Cucurbitaceae (2). 1 S. Afr.
Pistachio nut, *Pistacia vera* L.
Pistacia L. Anacardiaceae (3). 5 Medit., E. As., Mexico. Fls. dioec.,
 apet. or naked. Drupe. *P. Terebinthus* L. yields Chian turpentine,
P. Lentiscus L. mastic. Fr. of *P. vera* L. (pistachio nuts) ed.
Pistaciopsis Engl. Sapindaceae (II). 3 trop. Afr.

Pistia L. Araceae (VIII). 1 trop. and sub trop., *P. Stratiotes* L., a floating water-plant, rarely anchored by its roots, and often blown about by wind. It is of sympodial structure, but the internodes remain short and bear a rosette of large l.; these sleep at night, moving upwards from the nearly horiz. day position. The continuation shoots of the sympodium are axillary, but beside each l. arises a stolon which grows out along the water and gives rise to a new pl. The infl. is small and monoec.; above is a whorl of ♂ fls., each with a synandrium of 2 sta.; below is a ♀ fl. of 1 cpl. Both are naked. *P.* is a link between Lemnaceae and Araceae (*q.v.*).

Pistil, the whole G in syncarpous fl., each cpl. in apocarpous; -late fl., ♀; -lode, an aborted pistil.

Piston mechanism, *Campanulaceae*, *Compositae*, *Leguminosae*.

Pistorinia DC. = *Cotyledon* Tourn. p.p. (*Crass.*).

Pisum (Tourn.) Linn. Leguminosae (III. 9). 6 Medit. W. As., incl. *P. sativum* L. (pea). The fl. mech. resembles *Lathyrus*.

Pita, *Agave*.

Pitavia Molina. Rutaceae (I). 1 Chili.

Pitcairnia L'Hérit. Bromeliaceae (3). 100 S. Am. Most are terrestrial; many form stolons at the base. Cult. orn. infl.

Pitch, Canada, *Tsuga canadensis* Carr.; -pine, *Pinus palustris* Mill., &c.

Pitcher-plant, an insectivorous pl. (*q.v.*) catching insects in pitchers, *Cephalotus*, *Darlingtonia*, *Heliamphora*, *Nepenthes*, *Sarracenia*. Cf. also *Dischidia*.

Pith tree, *Aeschynomene aspera* L.

Pithecoctenium Mart. ex DC. Bignoniaceae (I). 20 Brazil to Mex.

Pithecolobium Mart. Leguminosae (I. 1). 120 trop. Stipules often thorny. Fr. often coiled like *Medicago*. *P. Saman* Benth. (trop. S. Am.) is the rain tree, so called because of a legend that it was always raining under its branches. The ejections of juice by the cicadas are responsible for this (*cf.* *Acer*, *Andira*). It shows sleep movement of l. well.

Pithecoseris Mart. Compositae (1). 1 N. Brazil.

Pithocarpa Lindl. Compositae (4). 1 W. Austr.

Pittiera Cogn. Cucurbitaceae (3). 3 C. Am.

Pittlereila Schlechter. Orchidaceae (II. 18). 1 Costa Rica.

Pittoniotis Griseb. = *Antirrhoea* Comm. (Rubi.)

Pittosporaceae (*EF.*, *BH.*). Dicotyledons (Archichl. Rosales; Polygalinae *BH.*). 10 gen. 90 sp., confined (exc. *Pittosporum*) to Austr. Trees or shrubs, often climbing, with alt., leathery, evergr., usu. entire, exstip. l. Resin is present in large quantity in passages at the outer side of the bast. Fls. ♀, reg., 5-merous; sta. hypog.; cpls. 2 or more, forming a 1-loc. or multi-loc. ovary with parietal or axile plac., and 2-ranked ∞ anatrop. ov.; style simple. Caps. or berry with album. seeds. Chief genera: *Pittosporum*, *Billardiera*, *Sollya*. The relationships are very obscure (see *Nat. Pfl.*).

Pittosporopsis Craib. Icacinaceae. 1 Burma.

Pittosporum Banks. Pittosporaceae. 70 trop. and sub trop. [* The seeds of some are sticky. Some yield useful timber.

Pituranthos Viv. Umbelliferae (III. 5). 10 Afr., W. As.

Pituri, *Duboisia Hopwoodi*, F. Muell. (W. Austr.)

- Pityopus** J. K. Small (*Monotropa* p.p.). Pyrolaceae. 1 Oregon.
Pityranthe Thw. Tiliaceae. 1 Ceylon.
Pityrodia R. Br. Verbenaceae (3). 15 Austr.
Piuttia Mattei (*Thalictrum* p.p.). Ranunculaceae (3). 1 Himalaya.
Placea Miers. Amaryllidaceae (1). 3 Chili.
Placenta, see Ovary; *Butomaceae*, *Cabomba*.
Placocarpa Hook. f. Rubiaceae (11. 3). 1 Mexico.
Placodiscus Radlk. Sapindaceae (1). 3 trop. Afr.
Placolobium Miq. Leguminosae (inc. sed.). 1 Sumatra.
Placopoda Balf. f. Rubiaceae (1. 2). 1 Socotra.
Placus Lour. = *Blumea* DC. (Comp.)
Pladera Soland. = *Canscora* Lam. (Gentian.)
Plaesiantha Hook. f. (*Pellacalyx* EP.). Rhizophoraceae. 1 Borneo.
Plagianthus Forst. Malvaceae (2). 10 Austr., N.Z. *P. betulinus* A. Cunn. (N.Z.; lace-bark) good timber.
Plagio- (Gr. pref.), oblique; **-tropic**, placing itself $\perp$ the stimulus.
Plagiobasis Schrenk. Compositae (11). 2 W. As.
Plagiobothrys Fisch. et Mey. Boraginaceae (IV. 2). 15 Pac. Am.
Plagiocarpus Benth. Leguminosae (III. 6). 1 trop. Austr.
Plagiocaryum Willd. Inc. sed. 1 Brazil.
Plagiocheilus Arn. Compositae (7). 7 S. Am.
Plagiogyria Kunze. Polypodiaceae. 11 E. As., Am.
Plagiolirion Baker (*Elisena* EP.). Amaryllidaceae (1). 1 Colombia.
Plagiolophus Greenman. Compositae (5). 1 Yucatan.
Plagiopteron Griff. Flacourtiaceae (inc. sed.). 1 Further India.
Plagioscyphus Radlk. Sapindaceae (1). 1 Madagascar.
Plagiosetum Benth. Gramineae (5). 1 Austr.
Plagiosiphon Harms. Leguminosae (II. 2). 1 trop. Afr.
Plagiospermum Oliv. Rosaceae (II?) (*Celastr.* BH.). 1 N. China.
Plagiostachys Ridl. (*Alpinia* p.p.). Zingiberaceae (1). 5 Malaya.
Plagiostyles Pierre. Euphorbiaceae (A. I. 1). 1 trop. Afr.
Plagius L'Hérit. = *Chrysanthemum* Tourn. p.p. (Comp.)
Planaltoa Taubert. Compositae (2). 1 C. Brazil.
Planchonella Van Tiegh. Ochnaceae. 1 Peru.
Planchonia Blume. Lecythidaceae. 3 Malay Archipelago.
Plane tree, *Platanus orientalis* L.; (Scotland) sycamore.
Planera J. F. Gmel. Ulmaceae 1 S. U.S., a useful timber tree.
Planodes Greene (*Cardamine* p.p.). Cruciferae (2). 1 temp., sub trop.
Planotia Munro. Gramineae (13). 5 trop. S. Am.
Plant formations, associations, societies, descending grades of communities of plants found associated together on land with similar ecological characters. The *sand-dune formation*, e.g., is split (in England) into associations of *strand-plants*, of *marram grass*, and *fixed dunes*, and these again into societies. Cf. Tansley, *Types of British Vegetation*, Cambridge, 1911; **-s and insects**, cf. Flowers; **insectivorous-**, cf. Insectivorous; **ornamental-**, cf. Ornamental.
Plantaginaceae (EP., BH.). Dicots. (Sympet. Plantaginales). 3 gen., 200 sp. cosmop. (See genera.) Annual or perennial herbs; 1. without distinction into stalk and blade, exstip. Fls. usu. in heads or spikes, inconspic., usu. $\varnothing$, reg., without bracteoles, wind- or partly insect-fert. K (4), diagonally placed; C usu. (4) membranous; A 4,

with very long filaments and versatile anthers containing much powdery pollen; $\underline{G}$ usu. (2), 2-loc., with $1-\infty$ semi-anatr. ov. on axile plac. Fr. a membranous caps., opening with a lid cut off by a peripheral dehiscence, or sometimes, a nut surrounded by the persistent calyx. Embryo straight, in fleshy endosp. *Genera*: Plantago, Littorella, Bougueria. See P. and L. for details. The relationships of the P. are difficult to make out. The fl. is usu. regarded as derived from a 5-merous type in the same way as that of Veronica, and most authors agree in regarding the P. as degraded forms allied to Scrophulariaceae, Labiatae, &c. The wind-pollination of the flr. is also an evidence of this.

Plantaginales. The 7th order of Sympetalae.

Plantagineae. (BH.) = Plantaginaceae.

Plantago (Tourn.) L. Plantaginaceae. 200 cosmop.; 5 in Brit., good illustrations of the gen. *P. major* L. (greater plantain) is a perennial with a thick root and a rosette of large erect l., in whose axils arise the infls. (spikes). Fl. protog., the stigmas protruding from the bud; the sta. appear later. Wind-pollination is the rule, but insects sometimes visit them for pollen. The fruit-spikes are often given as food to cage-birds. *P. media* L. (hoary plantain) shows similar general features, but the l. lie flat on the ground (hence it is a troublesome weed); they exhibit the $3/8$ phyllotaxy (*q.v.*) very clearly. * The fl. is more conspicuous than *P. major* and has a pleasant scent, and though primarily wind-pollinated, is largely visited for pollen. It is sometimes gynodioec. (*cf.* Labiatae). *P. lanceolata* L. (rib-wort plantain) has narrow erect l. and fls., also gynodioec. *P. Coronopus* L. (buck's-horn plantain) is xero. with hairy l., growing in sandy places. Many S. Am. sp. show marked xero. characters—dense tufting, small hairy l., often grooved on the lower surface (*cf.* Ericaceae), &c. *P. maritima* L. (the sea-side plantain) has linear fleshy l.; it is found at high levels in the Scottish Mts., though rarely in the intermediate regions.

The seeds of many swell up when wetted and become mucilaginous (*cf.* Linum). Those of *P. Psyllium* L. (Medit.) are used in silk and cotton manufacture; they have also been used in medicine.

If the young growing infl. be vigorously shaken, when left to itself it droops and only becomes erect again after some time. The strain stretches the young cell walls beyond their limit of elasticity.

Plantain, *Musa paradisiaca* L. (in India &c., incl. *Musa Sapientum* L., the banana), **Plantago**; **bastard** - (W.I.), *Heliconia*; **water** -, *Alisma Plantago* L.

Platanaceae (EP., BH.). Dicots. (Archichl. Rosales; Unisexuales BH.). Only gen. *Platanus* (*q.v.*). Relationships obscure.

Platanthera Rich. (*Habenaria* p.p. BH.). Orchid. (II. 1). 80 N. temp., trop.

Platanus (Tourn.) L. Platanaceae. 5 N. temp., incl. the plane-tree, *P. orientalis* L. The bark scales off every year, leaving a smooth surface. The axillary bud is developed under the base of the petiole, which fits over it like an extinguisher. The stipules are united round the stem. Fls. monoec. in pend. heads, wind-fert. K, C 4 or 3, A 4 or 3, opp. sepals, $\underline{G}$ 4 or 3; ovules orthotr., pend. Multiple fr., each cpl. giving a caryopsis, often winged. Seed album. The wood of the plane is useful, and also that of the buttonwood of N. Am. *P. occidentalis* L.

- Platea** Blume. Icacinaceae. 6 Malay Archipelago.
- Plateilema** Cockerell (*Actinella* EP.). Compositae (6). 1 Mexico.
- Plathymenia** Benth. Leguminosae (I. 5). 2 Brazil. Good timber.
- Platonia** Mart. Guttiferae (v). 1 trop. Brazil. Fr. ed.
- Platorheedia** Roj. (*Platonia* p.p.). Myrtaceae. 1 Argentina.
- Platostoma** Beauv. Labiatae (VII). 4 trop. As., Afr.
- Platy-** (Gr. pref.), broad-; **-carpous**, broad-fruited, &c., &c.
- Platycalyx** N.E. Br. Ericaceae (IV. 2). 1 S. Afr.
- Platycarpha** Less. Compositae (10). 3 S.W. Afr.
- Platycarpum** Humb. et Bonpl. Rubiaceae (I. 4). 1 Venezuela.
- Platycarya** Sieb. et Zucc. Juglandaceae. 1 Japan, N. China.
- Platycelyphium** Harms. Leguminosae (III. 1). 1 trop. Afr.
- Platycentrum** Klotzsch = *Begonia* L. p.p. (Begon.).
- Platycentrum** Naud. Melastomaceae (1). 1 Guiana.
- Platycerium** Desv. Polypodiaceae. 8 Afr., Malaya, Austr. (stag-horn ferns), epiph., or on steep rock surfaces. The rhiz. is short and bears alt. l. of two kinds. The young l. are protected by hairs. Of the two kinds of l., the one stands $\pm$ erect (the 'mantle' l.), the other is pend., usu. much branched, and bears the sporangia in irreg. areas on its lower surface. Assimilation is chiefly carried on by the pend. l. Two types of mantle l. occur, repres. in *P. grande* J. Sm. and *P. bifurcatum* C. Chr. In the former the base of the l., which is unbranched, clings closely to the supporting trunk, whilst the upper part spreads out and makes a niche in which humus collects; in this the roots ramify and absorb food. In the latter the whole of the mantle l. clings to the support, and the only humus-supply is that furnished by the decay of old mantle l. and perhaps of the tree bark. This sp. grows in great colonies, owing to adv. budding from the roots. In both the bases of the l. are rather fleshy. Cult. orn.
- Platychaeta** Boiss. = *Pulicaria* Gaertn. p.p. (Comp.).
- Platyclinis** Benth. Orchidaceae (II. 3). 15 Indomal. Cult. orn. fl.
- Platycodon** A. DC. Campanulaceae (I. 1). 1 E. As. Cult. orn. fl.
- Platycoryne** Reichb. f. Orchidaceae (II. 1). 10 trop. Afr., Madag.
- Platycrater** Sieb. et Zucc. Saxifragaceae (III). 1 Japan.
- Platycyamus** Benth. Leguminosae (III. 10). 1 Brazil.
- Platydesma** H. Mann. Rutaceae (I). 4 Hawaiian Is.
- Platygyne** Mercier. Euphorbiaceae (A. II. 2). 1 Cuba.
- Platykeleba** N.E. Br. Asclepiadaceae (II. 1). 1 Madag.
- Platylepis** Kunth = *Ascolepis* Nees (Cyper.).
- Platylepis** A. Rich. Orchidaceae (II. 2). 6 warm Afr., Madag., Masc.
- Platylobium** Sm. Leguminosae (III. 3). 3 Austr. Pods flat.
- Platylophus** D. Don. Cunoniaceae. 1 S. Afr.
- Platymerium** Bartl. ex DC. (*Hypobathrum* EP.). Rubi. (I. 8). 1 Phil. Is.
- Platymiscium** Vog. Leguminosae (III. 8). 16 trop. Am. Good timber.
- Platymitrium** Warb. (*Dobera* p.p. EP.). Bixaceae. 1 C. trop. Afr.
- Platymitra** Boerl. Anonaceae (2). 1 Java.
- Platyosprion** Maxim. (*Sophora* p.p. EP.). Leguminosae (III. 1). 1 Jap.
- Platypholis** Maxim. Orobanchaceae. 1 Bonin Is. (Japan).
- Platypodium** Vog. Leguminosae (III. 8). 2 Brazil.
- Platypus** Small et Nash. Orchidaceae (II. 10). 1 N. Am.

- Platyrrhiza** Barb. Rodr. (*Zygostates* p.p. *EP.*). Orchidaceae (II. 19).
1 Brazil.
- Platysace** Bunge. Umbelliferae (I. 1). 3 Austr.
- Platyschkuhria** Rydberg (*Bahia* p.p.). Compositae (6). 2 N. Am.
- Platysepalum** Welw. ex Baker. Leguminosae (III. 6). 8 W. trop. Afr.
- Platyspermum** Hook. Cruciferae (2). 1 Oregon.
- Platystachys** C. Koch = *Tillandsia* L. p.p. (Bromel.).
- Platystele** Schlechter. Orchidaceae (II. 8). 1 Costa Rica.
- Platystemma** Wall. Gesneriaceae (1). 1 Himalaya.
- Platystemon** Benth. Papaveraceae (II). 20 W.N. Am. L. in apparent whorls (see fam.).
- Platystigma** Benth. (*Meconella* Nutt.). Papaveraceae (II). 3 California, Oregon. L. as in *Platystemon*.
- Platystigma** R. Br. Euphorbiaceae (inc. sed.). 1 India.
- Platytaenia** Kuhn. Polypodiaceae. 1 Malaya, Polynesia.
- Platythea** Steetz. Tremandraceae. 1 W. Austr.
- Platytinospora** Diels in Engl. Menispermaceae. 1 W. trop. Afr.
- Plazia** Ruiz et Pav. Compositae (12). 8 S. Andes, Argentina.
- Plecosorus** Fée. Polypodiaceae. 3 trop. Am.
- Plecosperrum** Tréc. Moraceae (1). 1 Indomal.
- Plectaneia** Thou. Apocynaceae (1. 3). 5 Madag.
- Plectis** O. F. Cook. Palmae (IV. 1). 1 C. Am.
- Plectocornia** Mart. et Blume. Palmae (III). 6 E. Indomal. Climbers like *Calamus* with hooked l.
- Plectocomiopsis** Benth. Palmae (III). 5 Malaya.
- Plectranthus** L'Hérit. Labiatae (VII). 110 palaeotrop., E. As.
- Plectritis** DC. (*Valerianella* p.p. *BH.*). Valerianaceae. 8 U.S., Chili.
- Plectrocarpa** Gillies. Zygophyllaceae. 1 temp. S. Am.
- Plectronia** L. Rubiaceae (II. 1). 100 palaeotrop. Some have axillary thorns.
- Plethrophora** H. C. Focke (*Comparettia* *BH.*). Orchid. (II. 19). 2 Guiana.
- Pleea** Michx. Liliaceae (1). 1 S.E. U.S.
- Plegerina** Arruda ex Koster. Inc. sed. 3 Brazil.
- Pleio-**, **pleo-** (Gr. pref.), several; **-chasial cyme**, one in which each successive branch bears > 2 fls.; **-mery**, with more whorls than normal.
- Pleiocardia** Greene (*Streptanthus* p.p.). Cruciferae (1). 10 Calif.
- Pleiocarpa** Benth. Apocynaceae (1. 2). 10 W. Afr.
- Pleiocarpidia** K. Schum. (*Aulacodiscus* *BH.*). Rubi. (1. 7). 1 Malaya.
- Pleioceras** Baill. Apocynaceae (II. 2). 3 W. trop. Afr.
- Pleiochiton** Naud. ex A. Gray. Melastomaceae (7). 7 S. Brazil.
- Pleiococca** F. Muell. Rutaceae (1). 1 E. Austr.
- Pleiogynium** Engl. Anacardiaceae (2). 1 Queensland.
- Pleiomers** A. DC. (*Myrsine* p.p. *BH.*). Myrsinaceae (II). 1 Canaries, Madeira.
- Pleione** D. Don (*Coelogyne* p.p. *BH.*). Orchidaceae (II. 3). 15 Indomal. Cult.
- Pleiospora** Harv. Leguminosae (III. 3). 2 S. Afr.
- Pleio-stachya** K. Schum. (*Ischnosiphon* p.p.). Marant. 2 Ecuador, C. Am.

Pleiotaenia Coulter et Rose (*Polytaenia* DC.). Umbelliferae (III. 6).
 1 N. Am.

Pleiotaxis Steetz. Compositae (12). 10 trop. Afr.

Plenckia Reissek. Celastraceae. 1 Brazil.

Plenus (Lat.), full.

Pleodendron Van Tiegh. (*Cinnamodendron* p.p.). Winteranaceae.
 1 W.I.

Pleodiporochna Van Tiegh. (*Ochna* p.p.). 1 trop. Afr.

Pleogyne Miers. Menispermaceae. 1 trop. E. Austr.

Pleomele Salisb. (*Dracaena* p.p.). Liliaceae (VI). 100 palaeotrop.

Pleonotoma Miers (*Bignonia* p.p.). Bignoniaceae (1). 6 Brazil.

Pleopeltis Humb. et Bonpl. = *Polypodium* L. (Polypod.).

Pleopetalum Van Tiegh. (*Ochna* p.p.). Ochnaceae. 4 Indomal.

Pleuratea Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 1 Brazil.

Plerandra A. Gray. Araliaceae (1). 6 New Guinea to Fiji.

Plerandropsis R. Viguier. Araliaceae (1). 1 Tonquin.

Pleroma D. Don = *Tibouchina* Aubl. p.p. (Melast.).

Plesiastrophia Pierre ex Hutchinson = *Mildbraedia* Pax (Euph.).

Plesmonium Schott. Araceae (IV). 1 N. India.

Plethadenia Urb. Rutaceae (1). 1 S. Domingo.

Plethiandra Hook. f. Melastomaceae (II). 2 Borneo.

Pleur-, pleuro- (Gr. pref.), side-; **-anthous**, *Orchidaceae*; **-rhizal**,
Cruciferae.

Pleurandra Labill. = *Hibbertia* Andr. p.p. (Dillen.).

Pleurandropsis Baill. (*Asterolasia* p.p. *BH.*). Rutac. (1). 1 W. Austr.

Pleuranthium Benth. (*Epidendrum* p.p. *EP.*). Orchid. (II. 6). 1 Cuba.

Pleuranthodes Weberb. (*Gouania* p.p.). Rhamnaceae. 2 Hawaiian Is.

Pleuricospora A. Gray. Pyrolaceae. 1 California.

Pleurisanthes Baill. Icacinaceae. 1 French Guiana.

Pleuroblepharis Baill. Acanthaceae (IV. B). 1 Madag.

Pleuroblepharon Kunze. Orchidaceae. Nomen.

Pleurobotryum Barb. Rodr. (*Pleurothallis* p.p.). Orch. (II. 8). 1 Braz.

Pleurocalyptus Brongn. et Gris. Myrtaceae (II. 1). 1 New Caled.

Pleurocarpaea Benth. Compositae (1). 1 trop. Austr.

Pleurocoffea Baill. Rubiaceae (II. 4). 1 Madag.

Pleurogyna Eschsch. ex Cham. et Schlechtd. Gentianaceae (1). 7 N.
 temp. and cold.

Pleuropetalum Hook. f. Amarantaceae (1). 2 C. Am., Galapagos.

Pleurophora D. Don. Lythraceae. 5 S. Am.

Pleurophragma Rydberg (*Thelypodium* p.p.). Crucif. (1). 3 N. Am.

Pleurophyllum Hook. f. Compositae (3). 2 S. islands off N.Z.

Pleuropogon R. Br. Gramineae (10). 3 N. temp. and polar.

Pleuropterantha Franch. Amarantaceae (2). (*Chenop.* *BH.*) 1
 Somaliland.

Pleuropterygium Gross. (*Polygonum* p.p.). Polygonaceae (II. 2). 3
 Japan, Saghalien.

Pleuroridgea Van Tiegh. (*Ochna* p.p.). Ochnaceae. 5 trop. Afr.

Pleurosorus Fée. Polypodiaceae. 3 Spain, Chili, N.Z.

Pleurospermum Hoffm. Umbelliferae (III. 4). 25 N. As., E. Eur.

Pleurostachys Brongn. (*Rhynchospora* p.p. *EP.*). Cyper. (II). 30
 S. Am.

- Pleurostelma** Baill. Asclepiadaceae (II. 1). 1 Madag.
- Pleurostelma** Schlechter (*Schlechterella* EP.). Asclep. (I). 1 E. Afr.
- Pleurostemon** Raf. Inc. sed. 1 N. Am.
- Pleurostyliia** Wight et Arn. Celastraceae. 2 S. Afr. to India.
- Pleurothallis** R. Br. Orchidaceae (II. 8). 500 trop. Am., W.I.
- Pleurothyrium** Nees. Lauraceae (I). 1 Peru.
- Plicate** (vernation), folded several times.
- Plicouratea** Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 8 Brazil.
- Plinthus** Fenzl. Aizoaceae (II). 1 Cape Colony.
- Pliogynopsis** O. Ktze. (*Pleiogynium* Engl.). Anacard. (2). 1 N.E. Austr.
- Plocama** Ait. Rubiaceae (II. 7). 1 Canaries.
- Plocaniophyllon** T. S. Brandege. Rubiaceae (I. 8). 1 Mexico.
- Plocoglottis** Blume. Orchidaceae (II. 9). 10 Malay Archipelago.
- Plocosperma** Benth. Loganiaceae. 2 Guatemala, Mexico.
- Pluchea** Cass. Compositae (4). 30 trop. and subtrop.
- Plukenetia** L. Euphorbiaceae (A. II. 2). 12 warm Am., Afr., As.
- Plum**, *Prunus domestica* L.; **coco-**, *Chrysobalanus*; **date-**, *Diospyros Kaki* L. f.; **hog-**, *Spondias*; **Madagascar-**, *Flacourtia*; **marmalade-** (W.I.), *Lucuma mammosa* Gaertn. f.; **sapodilla-**, *Achras Sapota* L.; **tamarind-**, *Dialium indum* L.; **-tree, seaside** (W.I.), *Ximenia*.
- Plumbagella** Spach (*Plumbago* p.p. BH.). Plumbaginaceae. 1 E. As.
- Plumbaginaceae** (EP., BH.). Dicotys. (Sympet. Plumbaginales; Primulales BH.). 10 gen., 280 sp. cosmop., but esp. on salt steppes and sea-coast. Perennial herbs or shrubs with narrow l., on whose surface water glands occur, or sometimes chalk glands (*cf.* Saxifraga). Infl. of various types, racemose and cymose (see *Plumbago*, *Ceratostigma*, *Statice*, *Armeria*), bracteolate. Fls. reg., 8, 5-merous, the odd sepal post. K persistent, C often nearly polypetalous, conv., A 5, epipet. and opp. the petals, G (5), 1-loc., with basal placenta, and one anatr. ov., whose stalk curves up to the top of the loc. and causes the micropyle to be directed upwards. Styles or stigmas 5. Nut; embryo straight, in floury endosp. The fam. is distinguished from Primulaceae by the ovary and styles. *Chief genera*: *Plumbago*, *Ceratostigma*, *Acantholimon*, *Armeria*, *Statice*, *Limoniastrum*.
- Plumbaginales**. The 3rd order of Dicots. Sympetalae.
- Plumbago** Tourn. ex L. Plumbaginaceae. 10 cosmop. Racemose infl. K with glandular hairs, aiding seed-dispersal.
- Plumbeus** (Lat.), lead-coloured.
- Plumeria** Tourn. ex L. Apocynaceae (I. 3). 45 warm Am. Several cult. orn. perf. fls. (offered in Buddhist temples), esp. *P. acutifolia* Poir (temple tree, frangipani).
- Plummera** A. Gray. Compositae (6). 1 Arizona.
- Plumose**, feathered.
- Plumule**, the stem bud of the embryo pl. in the seed.
- Pluri-** (Lat. pref.), many-.
- Pneumatophore**, erect root with aerenchyma; *cf.* Mangroves.
- Pneumonanthé** Gleditsch (*Gentiana* p.p.). Gentian. (I). 25 N. Am.
- Po** (fl.-class), fls. offering pollen only to visitors, *Anemone*, *Hypericum*, *Papaver*, *Rosa*, *Thalictrum*, *Verbascum*.

- Poa** L. Gramineae (10). 150 cosmop.; 8 in Brit. (meadow grass).
Many are useful pasture-grasses.
- Poacynum** Baill. (*Apocynum* p.p.). Apocynaceae (II. 1). 1 trop. Afr.
L. alt.
- Poaephyllum** Ridley (*Agrostophyllum* p.p.). Orchid. (II. 4). 1 Malaya.
- Poagrostis** Stapf. Gramineae (9). 1 S. Afr.
- Pochota** Goyena. Bombacaceae. 1 Nicaragua.
- Pockwood tree** (W.I.), *Guaiacum*.
- Pocockia** Ser. = *Trigonella* L. p.p. (Legum.).
- Podachaenium** Benth. (*Ferdinanda* p.p. *EP.*). Compositae (5). 1 C. Am. Cult. orn. l.
- Podadenia** Thw. Euphorbiaceae (A. II. 2). 1 Ceylon.
- Podagrostis** Scribner et Merrill (*Agrostis* p.p.). Gramineae (8). 1 Alaska to Oregon.
- Podalyria** Lam. Leguminosae (III. 2). 20 S. Afr.
- Podandra** Baill. Asclepiadaceae (II. 1). 1 Bolivia.
- Podandria** Rolfe (*Habenaria* p.p. *EP.*). Orchidaceae (II. 1). 1 trop. Afr.
- Podanthes** Haw. (*Stapelia* p.p.). Asclepiadaceae (II. 3). 8 S. Afr.
- Podanthum** Boiss. (*Phyteuma* p.p.). Campanulaceae (I. 1). 50 Medit.
- Podanthus** Lag. Compositae (5). 2 Chili, Argentina.
- Podistera** S. Wats. (*Cymopterus* p.p.). Umbelliferae (III. 5). 1 N. Am.
- Podo-** (Gr. pref.), stalk.
- Podocarpus** (L'Hérit.) Pers. Coniferae (Taxac. 5; see C. for gen. chars.).
60 E. As. and S. temp. and trop. Dioec.; ♀ peculiar. There are usu. three pairs of scales, decussate. One of the middle pair projects above all the rest, bearing an anat. ov. The other 5 are sometimes united to form the so-called recept. The fr. usu. consists of a fleshy mass (the 'recept.') bearing an arillate seed. In some the sterile scales do not become fleshy. Timber valuable.
- Podochilus** Blume. Orchidaceae (II. a. III). 12 Indomal. Epiphytes.
- Podochrea** Fourr. = *Astragalus* L. p.p. (Legum.).
- Podochrosia** Baill. Apocynaceae (I. 3). 1 New Caledonia.
- Podococcus** G. Mann et H. Wendl. Palmae (IV. 1). 1 W. trop. Afr.
- Podocoma** Cass. Compositae (3). 7 Austr., S. Am.
- Podogynium** Taub. Leguminosae (II. 2). 1 E. trop. Afr.
- Podolasia** N.E. Br. Araceae (IV). 1 Borneo.
- Podolepis** Labill. Compositae (4). 15 Austr.
- Podolobium** R. Br. = *Oxylobium* Andr. (Legum.).
- Podonephelium** Baill. Sapindaceae (1). 2 New Caledonia.
- Podoon** Baill. Phytolaccaceae. 1 Yunnan.
- Podopetalum** F. Muell. Leguminosae (III. 1). 1 Queensland.
- Podophania** Baill. Compositae (2). 1 Mexico.
- Podophorus** Phil. Gramineae (8). 1 Juan Fernandez.
- Podophyllum** L. Berberidaceae. 5 N. temp. (May apple). In *P. peltatum* L. the rhiz. sends up yearly a shoot bearing two large peltate l., which hang down when young like a closed umbrella. A drug is prepared from the rhiz. Fr. a berry, whose flesh consists chiefly of the plac. which grows up round the seeds (wrongly termed aril).
- Podopogon** Ehrenb. Inc. sed. Nomen.
- Podopterus** Humb. et Bonpl. Polygonaceae (III. 1). 1 Mexico.

- Podorungia** Baill. Acanthaceae (IV. B). 1 Madag.
- Podosciadium** A. Gray (*Eulophus* p.p. *EP.*). Umbelliferae (III. 5).
2 Calif.
- Podosemum** Desv. = *Muehlenbergia* Schreb. p.p. (Gram.).
- Podosperma** Labill. = *Podotheca* Cass. (Comp.).
- Podospermum** DC. = *Scorzonera* L. p.p. (Comp.).
- Podostelma** K. Schum. Asclepiadaceae (II. 1). 1 Abyssinia.
- Podostemma** Greene (*Asclepias* p.p.). Asclepiad. (II. 1). 6 N. Am.
- Podostemaceae** (*EP.* and *BH.* incl. *Tristichaceae*). Dicotyledons (Archichl. Rosales; Multiovulatae aquaticae *BH.*). 22 gen., 100 sp. trop. A remarkable fam. of plants living only in rushing water, and growing only on rocks in rivers. The morphology of the veg. organs is extremely varied and complex. The seeds are shed on the rocks during the drier season of the year, and germinate when the rains cause them to be submerged. The primary axis is usu. small, and from the base there buds out a green *thallus*, usu. of adv. root nature. In *Podostemon*, &c. it is $\pm$ filamentous, creeping on the rock, and attached to it by hairs or exogenous projections termed *haptera*. In *Dicraea* it is $\pm$ freely swimming and often ribbon-like or sea-weed-like. In *Hydrobryum* it is $\pm$ flattened, creeping, lichen-like. Other complications occur in *Castelnavia* and others. From the thallus in most cases endogenous secondary shoots arise, and remain veg. (l. alt., simple or much divided) till the latter part of the rainy season, when they form fls. which open when exposed by the fall of the water. The plants die after shedding their seed, unless an early rise of water occurs. Their outer tissues are usually very siliceous. Fls. simple, $\frac{3}{4}$, reg. or not, naked, enclosed in a spathe, hypog. A 1-2- ∞ , G usu. (2) 2-loc. with thick axile plac. Ovules ∞ (exc. *Farmeria*), anatr. Caps.; exalbum. seeds. The more dorsiventral the veg. organs, the more dorsiventral in general is the fl., the phenomenon showing progressively in A, G, fr., seed, and embryo. *Chief genera*: *Rhyncholacis*, *Mourera*, *Podostemon*, *Dicraea*, *Hydrobryum*, *Castelnavia*. [For full details see Willis in *Ann. Perad.* 1, 1902 and literature there quoted.]
- Podostemon** Tul. Podostemaceae. 12 trop. and subtrop.
- Podostigma** Ell. Asclepiadaceae (II. 1). 1 S.E. U.S.
- Podotheca** Cass. Compositae (4). 5 temp. Austr.
- Podranea** Sprague (*Tecoma* p.p.). Bignoniaceae (2). 2 warm Afr.
- Poecilandra** Tul. Ochnaceae. 1 Guiana, N. Brazil.
- Poecilanthus** Benth. Leguminosae (III. 6). 3 Brazil.
- Poecilochroma** Miers. Solanaceae (2). 8 Peru, Ecuador.
- Poeciloneuron** Bedd. Guttiferae (IV). 2 S. India.
- Poecilopteris** Presl = *Leptochilus* Kaulf.
- Poecilostachys** Hack. Gramineae (10). 2 Madag.
- Poederiopsis** Rusby (*Paederia* p.p.). Rubiaceae (II. 6). 1 Boliv.
- Poeppigia** C. Presl. Leguminosae (II. 8). 1 trop. Am., W.I.
- Poga** Pierre. Rhizophoraceae. 1 Gaboon.
- Poggea** Guerke. Flacourtiaceae (2). 2 W. trop. Afr.
- Poggeophyton** Pax. Euphorbiaceae (A. II. 2). 1 W. trop. Afr.
- Pogochloa** Sp. Moore. Gramineae (10). 1 Matto Grosso.
- Pogocybe** Pierre. Leguminosae (II. 7). 1 Cochinchina.
- Pogogyne** Benth. Labiatae (VI). 3 California.

-pogon (Gr. suff.), a beard of hairs.

Pogonanthera Blume. Melastomaceae (1). 3 Malaya.

Pogonanthus Montr. Inc. sed. 1 New Caled.

Pogonarthria Stapf. Gramineae (10). 2 trop. and S. Afr.

Pogonatherum Beauv. Gramineae (2). 2 India to Japan. Sta. 2.

Pogonia Andr. = Myoporum Banks et Soland. (Myopor.).

Pogonia Juss. Orchidaceae (11. 2). 5 E. As.

Pogoniopsis Reichb. f. Orchidaceae (11. 2). 1 Brazil.

Pogonophora Miers. Euphorbiaceae (A. 11. 5). 1 Guiana, Brazil.

Pogonopus Klotzsch. Rubiaceae (1. 1). 3 S. and C. Am.

Pogonotrophe Miq. = Ficus Tourn. p.p. (Mor.).

Pogopetalum Benth. = Emmotum Desv. (Icacin.).

Pogostemon Desf. Labiatae (VI). 35 Indomal. *P. Patchouly* Pellet yields the well-known perfume by distillation.

Poicilla Griseb. Asclepiadaceae (11. 4). 1 Cuba.

Poicillopsis Schlechter (*Poicilla* p.p.). Asclepiadaceae (11. 4). 1 S. Domingo.

Poikilacanthus Lindau (*Adhatoda* p.p.). Acanth. (IV. B). 4 S. Am.

Poikilospermum Zipp. ex Miq. Urticaceae (3). 1 Amboina.

Poinciana Tourn. ex Linn. Leguminosae (11. 7). 3 trop. Afr., Madag., As. *P. regia* Boj. cult. orn. flg. tree (flamboyante).

Poinsettia R. Grah. = Euphorbia L. p.p. (Euph.).

Poiretia Vent. Leguminosae (III. 7). 5 trop. Am.

Poison, *Acokanthera*, *Aconitum*, *Antiaris*, *Erythrophloeum*, *Physostigma*, *Strychnos*, *Toxicodendrum*, &c.; - **berry** (W.I.), *Cestrum*; **bikh** -, *Aconitum*; **curare** -, *Strychnos toxifera* Schomb.; - **dogwood** (Am.), *Rhus venenata* DC.; - **hemlock** (Am.), *Conium*; - **ivy**, *Rhus Toxicodendron* L.; - **oak**, *Rhus*; - **sumach** (Am.), *Rhus*; **wourali** -, *Strychnos*.

Poissonia Baill. (*Coursetia* p.p.). Leguminosae (III. 6). 1 Peru.

Poitea Vent. Leguminosae (III. 6). 5 W.I.

Poium (Cl.), a meadow formation.

Poivrea Comm. ex Thou. = Combretum L. (Combr.).

Pokeweed, *Phytolacca*.

Polakia Stapf. Labiatae (VI). 1 Persia.

Polakowskia Pittier. Cucurbitaceae (4). 1 Costa Rica.

Polanisia Rafin. (*Cleome* p.p. *BH.*). Capparid. (v). 30 trop., subtrop.

Polemannia Eckl. et Zeyh. Umbelliferae (III. 5). 2 S. Afr.

Polemoniaceae (*EP.*, *BH.*). Dicots. (Sympet. Tubiflorae; Polemoniales *BH.*). 8 gen., 200 sp., chiefly N. Am.; a few in Chili, Peru, Eur., N. As. Herbs (rarely shrubby below), glabrous or shortly hairy, with usu. opp. exstip. l. Fls. in cymes (sometimes condensed into involucrate heads), ♂. reg. or slightly ♀, with or without bracteoles. K (5), valvate or imbr., persistent; C (5), bell-funnel- or plate-shaped, usu. conv.; A 5, epipet., alt. with petals; G (3) or rarely (2—5), on a disc, multiloc., with simple style ± lobed at tip. Ovules 1—∞ in each loc., anatr., sessile. Fr. usu. a loculic. caps. Embryo straight, in endosp. *Chief genera*: *Cobaea*, *Cantua*, *Phlox*, *Collomia*, *Gilia*, *Polemonium* (mostly favourite border plants).

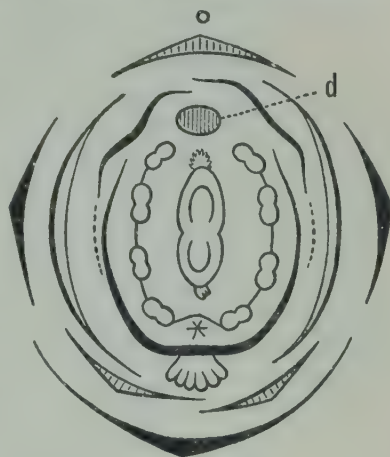
Polemoniales (*BH.*). The 8th order of Gamopetalae.

Polemoniella A. A. Heller (*Polemonium* p.p.). Polemon. 1 N. Am.

- Polemonium** (Tourn.) L. Polemoniaceae. 20 N. temp., Chili. *P. caeruleum* L. (Jacob's ladder) in Brit.
- Polianthes** L. Amaryllidaceae (II). 3 C. Am. *P. tuberosa* L. (tuberose) cult. for scented fls.
- Poliomntha** A. Gray (*Hedeoma* p.p. *EP.*). Labiatae (VI). 5 S.W. N. Am.
- Poliothyrsis** Oliv. Flacourtiaceae (4). 1 China.
- Polish wheat**, *Triticum polonicum* L.
- Politus** (Lat.), polished.
- Polium** Tourn. ex L. = *Teucrium* Tourn. p.p. (Labiatae).
- Pollards**, *Salix*, &c.
- Pollen**, the microspores of fl. pl.; - as food for insects, cf. Po; - cup, *Goodeniaceae* - **dimorphism**, *Faramaea*; - **sac**, cf. *Cucurbitaceae*.
- Pollia** Thunb. Commelinaceae. 16 palaeotrop.
- Pollichia** (Soland. in) Ait. Caryophyll. (I. 4). 2 trop. and S. Afr.
- Pollination**, the placing of pollen upon the stigma or ovule, may be effected by wind, animals, or water, and may be cross or self-fert. *Wind-pollinated* fls. (class W) show abundance of pollen, ripening simultaneously, dry and incoherent, freely accessible to the wind (catkins, pend. sta., explosive anthers, &c.); large much-branched stigmas to catch it; often flowering before the l. appear, &c.; *Artemisia*, *Betulaceae*, *Calluna*, *Carex*, *Casuarina*, *Coniferae*, *Corylus*, *Cycadaceae*, *Cyperaceae*, *Elaeagnaceae*, *Empetrum*, *Fraxinus*, *Gramineae*, *Humulus*, *Juglandaceae*, *Juncaceae*, *Littorella*, *Mercurialis*, *Myrothamnaceae*, *Platanus*, *Potamogeton*, *Quercus*, *Rumex*, *Sparganium*, *Spinacia*, *Thalictrum*, *Triglochin*, *Typhaceae*, *Ulmaceae*, *Urticaceae*, *Zea*. *Pollination by animals* is usu. by insects; the most important are Coleoptera (beetles), very short tongued, Diptera (flies), mostly short tongued, but the Syrphidae or hover-flies long tongued and clever at finding concealed honey, Hymenoptera (ants, wasps, bees, &c.) all short tongued but the bees, and Lepidoptera (butterflies and moths) all long tongued. Other animals are very rarely employed; bats in *Freycinetia* Cf. Flower classes, Floral Mechanisms. *Pollination by water* in *Ceratophyllum*, *Enhalus*, *Najas*, *Ruppia*, *Vallisneria*, *Zannichellia*, *Zostera*, &c.; **legitimate and illegitimate**, *Lythrum*, *Primula*.
- Pollinia** Trin. Gramineae (2). 40 warm |*.
- Pollinium**, a number of pollen-grains united into a mass (a definite number of masses per anther), *Asclepiad.*, *Orchid.*
- Polpoda** C. Presl. Phytolaccaceae (*Aizoaceae* *BH.*). 1 S. Afr.
- Poly-** (Gr. pref.), **many-**; **-adelphous**, **-androus**, &c.; **-carpic**, fruiting many times; **-embryony**, formation of > 1 embryo in an ovule; **-gamy**, ♂, ♂, and ♀ fls. in various combinations on one or more pl. *Anacardium*, *Euonymus*, *Fraxinus*, *Rhus*; **-morphism** (cf. Dimorphism), *Catasetum*, *Compositae*, *Cynoches*, *Griffithella*, *Liriodendron*; **-phyly**, origin from several stocks; **-pody**, *Polypodium*.
- Polyachyrus** Lag. Compositae (12). 12 Peru, Chili.
- Polyactidium** DC. = *Erigeron* L. p.p. (Comp.).
- Polyactium** Eckl. et Zeyh. = *Pelargonium* L'Hérit. p.p. (Geran.).
- Polyadenia** Nees (*Lindera* p.p. *BH.*). Lauraceae (II). 3 S.E. U. S.
- Polyadoa** Stapf (*Carpodinus* p.p.). Apocynaceae (I. 3). 2 W. Afr.

- Polyalthia** Blume. Anonaceae (1). 70 palaeotrop.
- Polyandrococos** Barb. Rodr. (*Diplothemium* p.p.). Palm. (IV. 2). 3 Braz.
- Polyaster** Hook. f. Rutaceae (1). 2 Mexico.
- Polybotrya** Humb. et Bonpl. Polypodiaceae. 30 warm Am., As., Polyn.
- Polycardia** Juss. Celastraceae. 5 Madag.
- Polycarena** Benth. Scrophulariaceae (II. 5). 12 S. and trop. Afr.
- Polycarpaea** Lam. Caryophyllaceae (I. 3). 30 cosmop.
- Polycarpicae** (Warming). The 8th order of Choripetalae.
- Polycarpon** Loefl. Caryophyllaceae (I. 3). 7 cosmop. *P. tetraphyllum* L. (polycarp or allseed) in Brit.
- Polycephalum** Engl. Icacinaceae. 2 trop. Afr.
- Polyceratocarpus** Engl. et Diels. Anonaceae (4). 1 Usambara.
- Polychaetia** Less. = *Nestlera* Spreng. (Comp.).
- Polychilos** Breda, Kuhl, et Hasselt (*Phalaenopsis* p.p. BH.) Orchidaceae (II. 20). 1 Burma.
- Polyclathra** Bertol. Cucurbitaceae (inc. sed.). 1 Guatemala.
- Polycline** Oliv. Compositae (4). 2 E. trop. Afr.
- Polycnemum** L. Chenopodiaceae (A). 5 Eur., Medit. Structure of the fr. curious, a ridge developing at its apex after fert.
- Polyctenium** Greene (*Smelowskia* p.p.). Cruciferae (4). 3 N.W. U.S.
- Polycycnis** Reichb. f. Orchidaceae (II. 13). 3 Guiana to C. Am.
- Polydragma** Hook. f. Euphorbiaceae (A. II. 2). 1 Perak.
- Polygala** (Tourn.) L. Polygalaceae. 475 cosmop. exc. N.Z., Polynes., and Arctic zone. A few have stipular thorns. *P. vulgaris* L. (milk-wort), in Brit. The fls. owe their conspicuousness to the two coloured sepals; they occur in three colours, red, white, and blue, usu. on different plants but sometimes on the same. The essential organs in most sp. are contained in the keel and emerge from it, as in Leguminosae, when it is depressed by a visiting insect. *P. Senega* L. (Senega snake-root) in N. Am. is medicinal.
- Polygalaceae** (EP., BH.). Dicots. (Archichl. Geraniales; Polygalinae BH.). 10 gen., 700 sp., cosmop. exc. N.Z., Polynes., and Arctic zone. Herbs, shrubs, or small trees with simple entire alt. opp. or whorled usu. exstip. l.; the stipules when present are usu. thorny or scaly. Infl. a raceme, spike, or panicle, with bracts and bracteoles. Flr. diplochl. medially. K usu. 5, rarely (5), the 2 inner sepals (alae) often large and petaloid; C 5, rarely all present usu. only 3—the lowest and two upper—± joined to sta.-tube, the median ant. petal keel-like and often with a term. brush; A in two 5-merous whorls, usu. only 8, or 7, 5, 4 or 3, usu. united below into an open tube; G (5—2), usu. (2), antero-post., 2-loc. with 1 anatrop. pend. ov. in each loc. (rarely 1-loc. with ∞ ov.). Caps. nut or drupe. Endosp. or not. The fl. mech., like the structure, resembles that found in many Leguminosae (cf. *Krameria*). Chief genera: *Polygala*, *Securidaca*, *Xanthophyllum*. For floral diagram see p. 529.
- Polygaleae** (BH.) = Polygalaceae.
- Polygalinae** (BH.). The 3rd order of Polypetalae.

Polygonaceae (EP., BH.). Dicots. (Archichl. Polygonales; Curvembryae BH.). 30 gen., 750 sp., chiefly N. temp.; a few trop., arctic, and southern. Most are herbs whose l. (exc. *Eriogoneae*) possess a peculiar sheathing stipule or *ochrea* (ocrea) clasping the stem above the leaf-base. This forms a char. feature of the fam. The infl. is primarily racemose, but the partial infls. usu. cymose. [See *Eriogonum*.] Fls. ♀, reg., cyclic or acyclic. The former have usu. the formula $P\ 3+3$, homochlamydeous; $A\ 3+3$, $\underline{G}\ (3)$; but many vary from this type. *Oxyria* is 2-merous; others, e.g. *Eriogonum*, *Rheum*, have branching of the outer sta. The acyclic fls. have $P\ 5$, arranged according to the $2/5$ phyllotaxy (e.g. *Polygonum*), $A\ 5-8$, $\underline{G}\ (3)$. Ovary 1-loc. with 1 erect orthotr. ov. and 3 styles. Fls. pollinated by wind or by insects. Fr. almost always a triangular nut, with smooth exterior. The seed contains an excentric curved or straight embryo surrounded by mealy endosp., sometimes ruminant. The fruits are usually wind-distributed; the persistent P usu. forms a membranous wing. Others are provided with hooks.



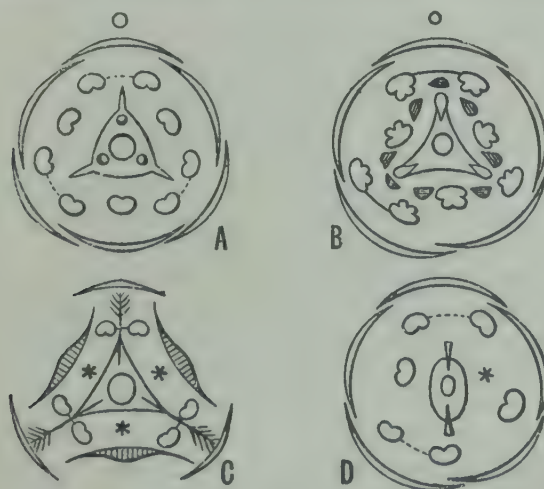
Floral diagram of *Polygala myrtifolia* (after Eichler); the gland *d* as in *P. Chamaebuxus*. Petals and bracts black; the missing petals represented by dotted lines, the missing sta. by *.

Classification and chief genera (after Dammer) :

A. Flower cyclic, endosp. not ruminant.

I. **RUMICOIDEAE.**

1. *Eriogoneae* (no ochrea): *Chorizanthe*, *Eriogonum*.
2. *Rumiceae* (ochreate): *Rumex*, *Rheum*, *Oxyria*.



Floral diagrams (after Eichler). A, *Rheum*; B, *Polygonum tataricum*; C, *Rumex*; D, *Polygonum lapathifolium*. Bracts and bracteoles are omitted, and in C and D the axis also. Glands in B shaded. The asterisks represent missing sta.

B. Acyclic (except a few Coccoleboideae).

II. *POLYGONOIDEAE* (endosp. not runcate).

1. *Atraphaxideae* (shrubs): Calligonum.

2. *Polygoneae* (herbs): Polygonum, Fagopyrum.

III. *COCCOLOBOIDEAE* (runcate).

1. *Coccolebeae* (usu. ♂): Muehlenbeckia, Coccoleba.

2. *Triplariideae* (usu. dioec.): Triplaris.

Polygonales. The 16th order of Archichlamydeae.

Polygonatum (Tourn.) Adans. Liliaceae (VII). 30 N. temp.; 3 in Brit. (Solomon's seal). There is a sympodial fleshy rhizome, upon which the annual shoots leave curious seal-like marks when they die away. Infl. unilat.; fl. homogamous, bee-pollinated.

Polygonella Michx. Polygonaceae (II. 2). 6 N. Am.

Polygoniflorae (Warming). The 5th order of Choripetalae.

Polygonum (Tourn.) L. Polygonaceae (II. 2). 175 cosmop., but esp. temp. (11 in Brit., knot-grass, bistort, &c.); herbaceous. Some are xero., some water plants (e.g. *P. amphibium* L., which may however be found almost as often on land, where its l. have not the stalks of the water form). The fls. are in spikes and panicles (the partial infl. is cymose). Fls. ♂, acyclic, usu. with a coloured 5-leaved P and about 8 sta. Honey is secreted at the base of the sta., and the fls. are visited by insects, but in varying degree (see the series of sp. described by Müller in *Fert. of Fls.* p. 509). Cleistog. fls. are found under the ochrea in *P. aviculare* L., &c. In *P. viviparum* L. (alpine Brit.) many of the fls. are replaced by bulbils in the lower part of the infl. (cf. *Lilium*, *Allium*). [*P. Fagopyrum* L. = *Fagopyrum*.]

Polygyne Phil. (*Plagiocheilus* p.p. BH.). Compositae (7). 1 Chili.

Polylepis Ruiz et Pav. Rosaceae (III. 5). 12 trop. S. Am.

Polylobium Eckl. et Zeyh. = *Lotononis* DC. p.p. (Legum.).

Polylophium Boiss. Umbelliferae (III. 7). 2 W. As.

Polymeria R. Br. Convolvulaceae (I). 7 Austr.

Polymnia L. Compositae (5). 15 Am.

Polymniastrum Small (*Polymnia* p.p.). Compositae (5). 1 E. U.S.

Polychnella Van Tiegh. (*Ochna* p.p.). Ochnaceae. 12 trop. Afr.

Polyosma Blume. Saxifragaceae (V). 12 Khasias to trop. Austr.

Polyouratea Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 4 Brazil.

Polyozus Lour. Rubiaceae (inc. sed.). 2 China, Cochinchina.

Polypetalae (BH.). A division of Dicotyledons.

Polyphragmon Desf. = *Timonius* Rumph. (Rubi.).

Polyplethia Van Tiegh. (*Balanophora* p.p.). Balanoph. 1 Indomal.

Polypodiaceae. Filicales Leptosporangiatæ, *q.v.* for more detail. 130 gen. with 3000 sp., cosmop., rare in dry regions (see *Nat. Pfl.* for details of geogr. distr.). Mostly herbaceous perennials with a creeping rhizome or ± erect root-stock; many epiphytic. Leaves usu. large and pinnate, with sori on the lower sides. Each sorus consists usu. of a large number of stalked sporangia, each with a vertical incomplete annulus and dehiscing transversely. An indusium may or may not be present.

Classification and chief genera (after Engler):

1. *Woodsieae* (sori term. or dorsal; indusium inf., extrorse or opening every way; spores bilateral); *Woodsia*, *Cystopteris*, *Onoclea*.
2. *Aspidieae* (sori usu. on backs of nerves; indusium sup. or o; spores bilateral; l. usu. unjointed): *Dryopteris*, *Polystichum*.
3. *Oleandreae* (sori as in 2; indusium kidney-shaped, oblique; spores kidney-shaped; l. divided): *Oleandra*.
4. *Davallieae* (sori on or near edge of a segment, with extrorse indusium): *Nephrolepis*, *Lindsaya*, *Davallia*.
5. *Asplenieae* (sori long or linear, unilat. along fertile nerves, with lat. indusium): *Blechnum*, *Asplenium*, *Scolopendrium*.
6. *Pterideae* (sori usu. long, term. or along fertile nerves; usu. without indusium, or edge of l. rolled back): *Gymnogramma*, *Cheilanthes*, *Adiantum*, *Pteris*, *Pteridium*.
7. *Vittarieae* (sori at edge or on nerves || midrib; l. unjointed): *Vittaria*.
8. *Polypodieae* (sori usu. roundish at end of a nerve; dead l. falling completely and leaving a scar): *Drymoglossum*, *Polypodium*, *Cyclophorus*, *Drynaria*.
9. *Acrosticheae* (lower side of l., in whole or part, covered with sporangia; no indusium): *Elaphoglossum*, *Platyserium*.

Polypodiopsis Carr. Coniferae (Taxaceae). 1 New Caledonia.

Polypodium L. (incl. *Grammitis*, *Pleopeltis*, *Selliguea*, &c.). Polypodiaceae. 600 cosmop. *P. vulgare* L. (polypody) in Brit. They have circular naked sori. Many trop. sp. are epiph., e.g. *P. Heracleum* Kze. The rhiz. creep over the supporting tree, and humus is collected in niches formed between it and the l. [*P. Dryopteris* L. (oak fern)=*Dryopteris* Linneana C. Chr.; *P. Phegopteris* L. (beech fern)=*D. Phegopteris* C. Chr.; *P. quercifolium* C.=*Drynaria quercifolia* J. Sm.]

Polypogon Desf. Gramineae (8). 10 warm temp. and trop.; 2 in Brit. (beard-grass).

Polypompholyx Lehm. Lentibulariaceae. 3 trop. Austr., S. Am.

Polyporandra Becc. Icacinaceae. 3 Malay Archipelago.

Polypremum L. Loganiaceae. 1 N. Am., W.I., Colombia.

Polypteris Nutt. (*Palafoxia* EP.). Compositae (6). 6 S.W. U.S., Mex.

Polyrhiza Pfitz. Orchidaceae (11. 20). 4 W.I.

Polyschistis J. & C. Presl. Gramineae (11). 1 Phil. Is.

Polyscias Forst. Araliaceae (1). 80 palaeotrop.

Polysolenia Hook. f. Rubiaceae (1. 7). 1 Khasias.

Polyspatha Benth. Commelinaceae. 1 W. trop. Afr.

Polysphaeria Hook. f. Rubiaceae (11. 1). 7 E. trop. Afr.

Polystachya Hook. Orchidaceae (11. 5). 75 Afr., trop. As., Am.

Polystemma Decne. Asclepiadaceae (11. 4). 2 C. Am., Mexico.

Polystemonanthus Harms. Leguminosae (11. 3). 1 Liberia.

Polystichum Roth. Polypodiaceae. 112 cosmop. *P. aculeatum* (L.) Schott (prickly shield fern) Brit.

Polytaenia DC. Umbelliferae (111. 6). 1 N. Am.

Polytaxis Bunge (*Jurinea* BH.). Compositae (11). 1 Turkestan.

- Polythecanthum** Van Tiegh. (*Ochna* p.p.). Ochnaceae. 4 S.E. As.
Polythecium Van Tiegh. (*Ochna* p.p.). Ochnaceae. 50 palaeotrop.
Polytoea R. Br. Gramineae (1). 5 Indomal.
Polytrema C. B. Clarke. Acanthaceae (IV. B). 3 Malay Peninsula.
Polytrias Hack. Gramineae (2). 1 Java.
Polyura Hook. f. Rubiaceae (I. 2). 1 Assam.
Polyxena Kunth. Liliaceae (V). 10 S. Afr.
Polyzygus Dalzell. Umbelliferae (III. 5). 1 S. India.
Pomaceae (Warming) = Rosaceae (sub-fam. II).
Pomaderris Labill. Rhamnaceae. 20 Austr., N.Z.
Pomatosace Maxim. Primulaceae. 1 China.
Pomatostoma Stapf. Melastomaceae (I). 4 Borneo.
Pomatotheca F. Muell. (*Trianthema* p.p. *EP.*). Aizo. (II). 1 Austr.
Pomax Soland. ex Gaertn. Rubiaceae (II. 7). 1 E. Austr.
Pomazota Ridl. Rubiaceae (I. 2). 1 Malay Peninsula.
Pombea Mutis. Inc. sed. Nomen.
Pome, the fruit of *Pyrus*, &c.
Pomegranate, *Punica Granatum* L.
Pomelo, *Citrus decumana* Murr.
Pometia Forst. Sapindaceae (I). 5 Indomal.
Pomiform, apple-like.
Pommereschea Wittmack. Zingiberaceae (I). 2 Burma.
Pommereulla L. f. Gramineae (10). 1 India.
Pomona, an account of fruits.
Pomphidea Miers. Rutaceae (inc. sed.). (*Apocyn. BH.*) 1 Jamaica.
Pompion, pumpkin, *Cucurbita Pepo* L.
Pond-weed, *Potamogeton*; **Cape -**, *Aponogeton*.
Ponera Lindl. Orchidaceae (II. 6). 8 C. Am., Mexico.
Ponerorchis Reichb. f. (*Habenaria* p.p. *BH.*). Orchid. (II. 1). 1 Japan.
Pongamia Vent. (*Galedupa* Lam.). Leguminosae (III. 8). 1 Indomal.
Pontederia L. Pontederiaceae. 2 Am. Fls. trimorphic, heterostyled (*cf. Lythrum*). *P. crassipes* Mart. = *Eichhornia crassipes*.
Pontederiaceae (*EP.*, *BH.*). Monocots. (Farinosae; Coronarieae *BH.*). 6 gen. with 21 sp. trop. Water plants, floating or rooted, of sympodial structure, the successive axes ending in infls. (sympodial cymose pseudo-racemes). Often, *e.g.* in *Eichhornia*, the axillary shoot is adnate to the main shoot from which it springs. Sometimes extra branches are formed, and the axis of the infl. is often pushed to one side so that it appears to spring from a leaf-sheath. Fls. $\cdot$, P (3 + 3), persistent; A 3 + 3, epiphyllous, G (3), 3-loc. with ∞ anat. ovules, or 1-loc. with 1 ovule; style long, stigma entire or slightly lobed. Capsule or nut. Embryo central in the seed, scarcely, or not, shorter than the rich mealy endosp. *Chief genera*: *Eichhornia*, *Pontederia*.
Ponthieva R. Br. Orchidaceae (II. 2). 10 warm Am.
Pontya A. Chevalier. Moraceae (1). 1 Ivory Coast.
Pony (W.I.), *Tecoma serratifolia* G. Don.
Poonac, crushed seeds after oil-extraction, esp. *Cocos*.
Poor man's weather glass, *Anagallis arvensis* L.
Poortmannia Drake (*Trianaea* p.p. *EP.*). Solanaceae (3). 1 Ecuador.
Poplar, *Populus*.
Popowia Endl. Anonaceae (1). 25 E. Indomal.

- Poppy**, *Papaver*; **Californian -**, *Eschscholtzia*, *Platystemon*; **opium -**, *Papaver somniferum* L.; **Welsh -**, *Meconopsis cambrica* Vig.; **yellow horned -**, *Glaucium flavum* Crantz.
- Populina** Baill. Acanthaceae (IV. B). 1 Madag.
- Populus** L. Salicaceae. 20 N. temp. *P. alba* L. (white poplar) and *P. tremula* L. (aspen) in Brit. Like *Salix*, but fls. wind-pollinated, with no honey; usu. more sta. than *Salix*. The wood of *P. alba* is useful, and also that of *P. nigra* L. (black poplar) with its variety *pyramidalis* Spach (*P. fastigiata* Desf.), the Lombardy poplar, often cult., *P. canadensis* Michx. (cotton-wood tree, N. Am.) and others. *P. balsamifera* L. (balsam poplar) yields a resin (tacamahac, see *Calophyllum*).
- Porana** Burm. f. Convolvulaceae (I). 10 Indomal.
- Poranthera** Rudge. Euphorbiaceae (B. I). 5 Austr.
- Poraqueiba** Aubl. Icacinaceae. 3 N. Brazil, W.I.
- Porcelia** Ruiz et Pav. (*Uvaria* p.p. EP). Anonaceae (I). 4 trop. Am.
- Porcupine grass** (Am.), *Stipa*; - **wood**, *Cocos nucifera* L.
- Pores, dehiscence by**, cf. Stamen.
- Porlieria** Ruiz et Pav. Zygophyllaceae. 3 Mexico, Andes. The leaflets of *P. hygrometrica* R. et P. spread out horiz. at night, but in the day fold up in pairs, reducing transpiration. Good timber.
- Porochna** Van Tiegh. (*Ochna* p.p.). Ochnaceae. 12 trop. Afr.
- Porocystis** Radlk. Sapindaceae (I). 1 Amazon valley, Guiana.
- Porogamae**, see Chalazogamae; **porogamic** (fert.), by micropyle.
- Porophyllum** Vaill. ex L. Compositae (6). 28 warm Am.
- Porospermum** F. Muell. Araliaceae (2). 1 N.E. Austr.
- Porotheca** K. Schum. Menispermaceae. 1 New Guinea.
- Porpax** Lindl. (*Eria* p.p. BH). Orchidaceae (II. 15). 6 Indomal.
- Porphyranthus** Engl. Burseraceae. 1 Cameroons.
- Porphyrocodon** Hook. f. Cruciferae (4). 1 Colombia.
- Porphyrocoma** Scheidw. (*Dianthera* p.p. BH). Acanthaceae (IV. B). 2 trop. S. Am. Cult. orn. fl.
- Porphyrodesme** Schlechter (*Saccolabium* p.p.). Orchidaceae (II. 20). 1 New Guinea.
- Porphyroglottis** Ridl. Orchidaceae (II. a. II). 1 Borneo.
- Porphyrospatha** Engl. Araceae (VI). 3 C. Am.
- Porphyrostemma** Benth. ex Oliv. Compositae (4). 1 E. Centr. Afr.
- Porrum** (Tourn.) L. = *Allium* Tourn. p.p. (Lili.).
- Portea** C. Koch. Bromeliaceae (4). 5 Brazil. Cult. orn. infl.
- Portenschlagia** Vis. Umbelliferae (III. 5). 1 Dalmatia.
- Porteria** Hook. = *Phyllactis* Pers. (BH.) = *Valeriana* Tourn. p.p.
- Portesia** Cav. = *Trichilia* P. Br. (Meli.).
- Portland arrowroot**, *Arum maculatum* L.
- Portlandia** P. Br. Rubiaceae (I. 1). 8 W.I., Mexico.
- Portugal laurel**, *Prunus lusitanica* L.
- Portulaca** L. Portulacaceae. 20 trop. and subtrop. (purslane). The fl. has a semi-inf. ovary and 4— ∞ sta. It remains closed in bad weather. The sta. of *P. oleracea* L. are sensitive to contact and move toward the side touched.
- Portulacaceae** (EP., BH). Dicots. (Archichl. Centrospermae; Caryophyllinae BH). 17 gen., 225 sp., cosmop., but esp. Am. Most are

annual herbs, often with fleshy l., and with stipules (sometimes repres. by axillary bundles of hairs). Fls. usu. in cymes (often dich. with tendency to cincinni), reg., ♀. K 2, the lower sepal (usu. ant.) overlapping the upper (the two are often regarded as bracteoles); C 5; A 5+5, or 5 opp. the petals, or some other number; G (2—8) usu. (3), sup. exc. in *Portulaca*, 1-loc. with several stigmas and 2—∞ campylotr. ov. on a central basal plac. The fls. secrete honey and are mostly insect-pollinated. Caps. with album. seeds; that of *Claytonia* and *Montia* is explosive; embryo more or less curved round the perisperm. *Chiefgenera*: *Calandrinia*, *Claytonia*, *Montia*, *Portulaca*, *Lewisia*.

Portulacaria Jacq. Portulacaceae. 2 S. Afr.

Portulacaceae (B.H.) = Portulacaceae.

Posadaea Cogn. Cucurbitaceae (2). 1 Colombia.

Posidonia Kon. Potamogetonaceae. 2 Austr., Medit. (used for packing glass).

Poskea Vatke. Boraginaceae (II). 1 Somaliland.

Posoqueria Aubl. Rubiaceae (i. 8). 5 S. Am., W.I.

Posterior, the side facing to the stem on which the flower is a branch (upper side in most floral diagrams).

Postea Boiss. et Blanche. Compositae (4). 4 Syria, Persia.

Posticous, on the posterior side.

Potalia Aubl. Loganiaceae. 1 trop. S. Am.

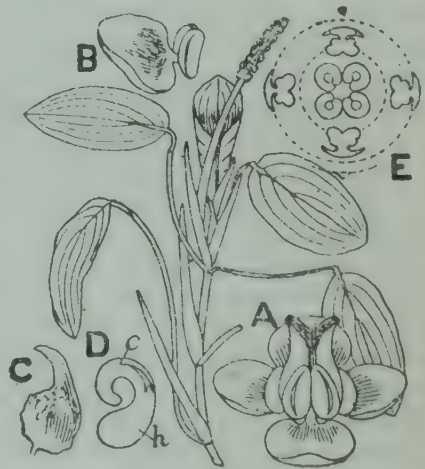
Potameia Thou. Lauraceae (II). 1 Madag.

Potamium (Cl.), a river formation.

Potambryon Liebm. Podostemaceae. 3 Mexico.

Potamogeton (Tourn.) L. Potamogetonaceae. 90 cosmop. 11 or more (cf. *Rubus*) in Brit. (pond-weed).

Water pl. with creeping sympodial rhiz. and erect leafy branches; all submerged or some floating. A series of types occurs, beginning with the floating sp. and ending with the narrow-leafed submerged ones. There can be no doubt of the origin of the *P.* from land pl., and Schenck looks upon *P. natans* L. as the sp. least modified to suit a water existence, i.e. the nearest to the ancestral type. The upper l. are ovate, leathery, and float; the lower submerged, sometimes linear. Then come such as *P. heterophyllus* Schreb. where the submerged l. are all narrow. Next *P. lucens* L., *P. crispus* L., &c. with all the l. lanceolate and submerged. Then in *P. obtusifolius* Mert. et Koch, *P. pusillus* L., &c., the leaves are narrow and of a long ribbon shape. *P. trichoides* Cham. et Schlecht. represents the most



Flowering shoot of *Potamogeton natans*, reduced. A—E. *P. crispus*. A. Flower, enlarged. B. Single stamen, showing petaloid connective, enlarged. C. A fruit, enlarged. D. Embryo; *h*, hypocotyl; *c*, cotyledon, the letter points to the top of the sheath which encloses the plumule. E. Floral diagram. A, B, D, after Le Maout and Decaisne; E, after Eichler.

highly modified type of all. [All the above are Brit. sp.; they are best studied at first in a herbarium.] Interesting phenomena connected with the above are to be seen in the germ. of the seeds, and the anatomy.

Hibernation in different ways; some remain green all winter; *P. natans*, &c. die down and leave only the rhiz.; *P. pectinatus* L. forms peculiar tubers on special branches (Schenk, *Wassergewächse*, p. 86); *P. crispus* and others form winter buds with broad l. (not closely packed as in *Utricularia*, &c., but wavy, like holly l.); *P. obtusifolius* forms winter buds of the ordinary kind. The fls. are of simple structure, arranged in spikes which project above the water. Each has 4 sta. in two whorls. and 4 cpls. From the connective of each sessile anther there grows out a cup-shaped expansion simulating a P leaf. The fl. is protog. and wind-fert. The outer layer of the pericarp contains air, so that the achene floats on the water and may thus be carried to a distance, sinking when the air escapes.

Potamogetonaceae (*EP.*; *Naiadeae* p.p. *BH.*). Monocots. (Helobieae). 9 gen., 120 sp., cosmop., all water plants, several marine. There is in most a creeping stem or rhiz., mono- or sym-podial, attached to the soil by adv. roots, and sending off erect branches upwards into the water. These usu. have ribbon leaves, submerged (exceptions in *Potamogeton*), arranged in $\frac{1}{2}$ phyllotaxy. The base is sheathing, and within the sheath are the small scales (*squamulae intravaginales*) which occur in most of the Helobieae. The infl. is a spike or cyme, or the fls. solitary. The fls. possess no true P (exc. *Zannichellia* ♀), but *Potamogeton* shows leaf-like outgrowths from the sta. which perform the P functions; similar structures occur in *Zostera* and *Ruppia*. In several gen. it is not easy to decide what is to be regarded as the fl. (see *Zostera*). Fl. ♂ or unisex., reg., 1—4-merous. Cpls. free or only 1. Ovules 1 in each cpl., pend. orthotr. Fruit one-seeded. No endosp. Embryo with well-developed hypocotyl. For details see genera.

Chief genera:

A. Fls. in spikes:

1. salt water: *Zostera*, *Phyllospadix*, *Posidonia*, *Ruppia*.
2. fresh or brackish: *Potamogeton*.

B. Fls. in cymes or sol.: *Cymodocea*, *Zannichellia*.

Potamophila R. Br. Gramineae (6). 1 Austr.

Potania Maxim. Rosaceae (III. 2). 1 Mongolia.

Potato, *Solanum tuberosum* L.; **sweet-**, *Ipomoea Batatas* Lam.

Potentilla L. (incl. *Comarum* L., *Tormentilla* L.). Rosaceae (III. 2). 225, chiefly N. temp. and arctic, a few S. temp. and Andes; 9 in Brit., incl. *P. Anserina* L. (silverweed), *P. reptans* L. (cinquefoil), *P. Comarum* Nestl., *P. Tormentilla* Neck. (tormentil), &c. Herbs, usu. with creeping stems which root at the nodes and thus multiply the plant veg. There is a well-marked *epicalyx* of small green l. outside and alt. with the seps. These are the stips. of the seps. united in pairs; often one or more may be seen with two lobes or even completely divided. Fls. of class AB, homogamous, fly-visited; honey secreted by a ring-shaped nectary within the sta.

Poteranthera Bong. Melastomaceae (1). 4 Brazil, Guiana.

- Poteridium** Spach, Rydberg (*Sanguisorba* p.p.). Ros. (III. 5). 1 N. Am.
Poterium L. (*BH.* incl. *Sanguisorba*, q.v. for Brit. sp.). Rosaceae (III. 5).
 1 Italy, E. Medit.
Potherbs, cf. Edible Products.
Pothoidium Schott. Araceae (I). 2 Malaya.
Pothos L. Araceae (I). 80 trop. As., Madag. Monopodial (see fam.).
 Stem climbing, with adv. roots. The buds break through the axils,
 so that the branching seems infra-axillary. Fl. ♂. P 3 + 3.
Pothuava Gaudich. (*Aechmea* p.p. *BH.*). Bromeliaceae (4). 1 S. Am.
Pottingeria Prain. Saxifragaceae (v). 1 India.
Pottsia Hook. et Arn. Apocynaceae (II. 2). 3 India, China.
Pouchetia A. Rich. Rubiaceae (I. 8). 3 W. trop. Afr.
Poulsenia Eggers. Moraceae (II). 1 Ecuador.
Pounce, *Tetraclinis quadrivalvis* Mast.
Poupartia Comm. (*Spondias* p.p. *BH.*). Anacardiaceae (2). 4 Madag.,
 Masc.
Pourouma Aubl. Moraceae (III). 20 trop. S. Am. Ed. fr.
Pourretia Ruiz et Pav. = *Puya* Molina (Bromel.).
Pourthiaea Decne. Rosaceae (II). 5 E. As.
Pouslowia Wight. Inc. sed. Nomen.
Pouteria Aubl. Sapotaceae (I). 30 trop. Am.
Pouzolzia Gaudich. Urticaceae (3). 40 palaeotrop. The root of *P.*
tuberosa Wight is eaten in India.
Poverty grass (Am.), *Aristida dichotoma* Michx.
Pozoa Lag. (*Azorella* p.p. *BH.*). Umbelliferae (I. 2). 4 Austr.,
 S. Am.
Pradosia Liais (*Lucuma* p.p. *BH.*). Sapotaceae (I). 1 Rio de Janeiro.
 Hard wood.
Praecox (Lat.), appearing early.
Praemorse, as if bitten off.
Praesepium Spreng. Rosaceae. Nomen.
Prageluria N.E. Br. = *Pergularia* (L.) N.E. Br.
Prairie, the grass country E. of the Rocky Mts.; - **clover** (Am.), *Petalostemon*; - **grass** (Am.), *Sporobolus asper* Kunth; - **turnip**, *Psoralea*.
Prainea King ex Hook. f. Moraceae (III). 3 Malaya.
Prangos Lindl. Umbelliferae (III. 4). 36 Medit., C. As.
Prantleia Mez (*Orthophytum* Beer). Bromeliaceae (4). 2 C. Brazil.
Praravinia Korth. Rubiaceae (I. 7). 1 Borneo.
Prasanthea Decne = *Paliavana* Vand. (Gesner.).
Prasium L. Labiatae (III). 1 Medit.
Prasophyllum R. Br. Orchidaceae (II. 2). 32 Austr., N.Z.
Pratal, growing in meadows; **pratensis** (Lat.), of meadows.
Pratia Gaudich. Campanul. (III). 16 S. Am., Austr., N.Z., trop. As.
Prefoliation, veneration.
Premna L. Verbenaceae (4). 45 trop. and subtrop. |*.
Prenanthes Rydberg (*Prenanthes* p.p.). Compositae (13). 1 N.W.
 Am.
Prenanthes Vaill. ex L. Compositae (13). 27 N. temp. and trop. Afr.
Preptanthe Reichb. f. (*Calanthe* p.p. *BH.*). Orchid. (II. 9). 2 trop. As.
Prepusa Mart. Gentianaceae (I). 3 Brazil.
Prescottia Lindl. Orchidaceae (II. 2). 22 trop. Am., W.I.

Preserving, cf. Collecting.

Preslia Opiz. Labiatae (VI). 1 W. Medit.

Prestoea Hook. f. Palmae (IV. 1). 2 Trinidad, Colombia.

Prestonia R. Br. Apocynaceae (II. 2). 30 trop. Am.

Pretrea J. Gay. Pedaliaceae. 1 S. and trop. Afr.

Pretreothamnus Engl. Pedaliaceae. 1 Somaliland.

Preussiella Gilg. Melastomaceae (I). 1 W. trop. Afr.

Prevostea Choisy (*Breweria* p.p. *BH.*). Convolv. (I). 10 trop. Afr., Am.

Prickly ash, *Zanthoxylum fraxineum* Willd.; - **heath**, *Pernettya*; - **lettuce**, *Lactuca*; - **pear**, *Opuntia*; - **pole** (W.I.), *Bactris*; - **poppy** (Am.), *Argemone*; - **shield-fern**, *Aspidium aculeatum* Sw.; - **withe** (W.I.), *Cereus triangularis* Mill.

Priestleya DC. Leguminosae (III. 3). 15 S. Afr.

Prim (Am.), privet, *Ligustrum vulgare* L.

Primine, outer coat of an ovule.

Primrose, *Primula vulgaris* Huds.; **Cape -**, *Streptocarpus*; **Chinese -**, *Primula sinensis* Sabine; **evening -**, *Oenothera*; - **willow** (W.I.), *Jussieuia*.

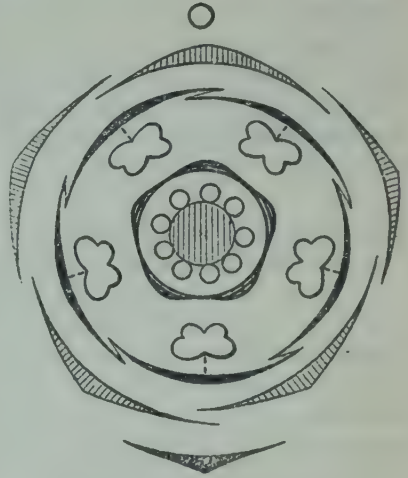
Primula L. Primulaceae. 210 N. hemisph. chiefly in hilly districts. A few elsewhere, e.g. *P. farinosa* L., var. *magellanica* Hook., at the Str. of Magelhaen. The rhizome is a sympodium, each joint terminating in an infl. In some sp. this consists of successive whorls of fls. arranged up a long stalk, e.g. *japonica* A. Gray. A few of the more important sp. are: *P. sinensis* Sabine, the Chinese primrose, *P. elatior* Hill, the oxlip (Brit.); *P. vulgaris* Huds. (*P. acaulis* Hill), the primrose (Brit.), *P. veris* Lehm. (*P. officinalis* Jacq.), the cowslip (Brit.), *P. farinosa*, L. (Brit.), *P. japonica* A. Gray, *P. Auricula* L., the auricula with its many forms. A great many hybrids occur, and garden vars. In the double crowned cowslip the K has become petaloid, so that the fl. looks as if it had two Cs, one within the other.

The fls. are dimorphic, heterostyled. On one pl. are long-styled fls. with sta. halfway up the tube and the stigma at its mouth; on another plant are short-styled fls., with stigma halfway up and anthers at the mouth. The depth and narrowness of the tube suit the fl. to bees or butterflies, and these tend to carry pollen from long sta. to long style or from short to short. These 'legitimate' pollinations (see *Lythrum*) which are at the same time crossings, are the only ones which produce a full complement of fertile seed.

The fl. stalks in umbellate forms, e.g. cowslip, stand close and erect till the fls. open, then spread out, and close up again as the fr. ripens; thus the caps. is held erect and the seeds must be shaken out.

Primulaceae (*EP.*, *BH.*). Dicots. (Sympet. Primulales). 28 gen., 350 sp. cosmop., but esp. N. temp. 9 Brit. genera. Herbaceous pl., commonly perenn., with rhiz. or tubers; l. opp. or alt., exstip. Fls. often borne on scapes, which when > 1-flowered are term.; they are usually actinom., ♂, often heterostyled, and 5-merous, without bracteoles, the odd (4th) sepal post. K (5) persistent; C (5), reg. (exc. *Coris*), or 5, or 0 (*Glauca*); A 5, epipet. and opp. the pets.; occasionally 5 stds. alt. with the pets.; anthers intr. The presence of the stds. here

as in Myrsinaceae explains the antepetalous position of the sta. as due to the abortion of the originally outer whorl. Much discussion took place on this subject in former times, especially after Pfeffer's discovery of the peculiar development of the corolla from the backs of the sta. (see Eichler, *Blüthendiag.* or Asa Gray, *Struct. Bot.* p. 197). Ovary superior or half-inferior (*Samolus*), syncarpous with free central placenta, typically of 5 cpls., but this is not easily proved, as no partitions (*cf.* Caryophyllaceae) are found in the ovary and the style and stigma are simple. The capsule splits into 5 valves; and monstrous fls. with 5 leaves in place of the ovary occur; hence we may perhaps assume 5 cpls. Ovules ∞ , spirally or in whorls on the placenta, semi-anatropous. The morphology of the free-central placenta has also been a subject of dispute (see Pax in *Nat. Pfl.* or Eichler, *Blüthendiag.*).



Floral diagram of *Primula acaulis* (after Eichler).

A great number of the *P.* have heterostyled flowers (*Primula*, *Hottonia*, *Glaux*, *Androsace*, &c., *q.v.* for details).

The fruit is a capsule, dehiscing in various ways, but usually by teeth at the tip, one opposite to each sepal. Seeds few or many; embryo small, in fleshy endosperm. *Chief genera:* *Primula*, *Androsace*, *Soldanella*, *Hottonia*, *Samolus*, *Lysimachia*, *Trientalis*, *Glaux*, *Anagallis*, *Cyclamen*.

Primulales. The 2nd order (*EP.*) of Sympetalae. The 5th order (*BH.*) of Gamopetalae.

Primulina Hance. Gesneriaceae (I). 1 China.

Primulinae (Warming). The 3rd order of Sympetalae.

Prince's feather, *Amaranthus*.

Princewood bark (W.I.), *Exostemma*.

Principes. The 5th order of Monocotyledons.

Pringlea Anders. ex Hook. f. Cruciferae (I). *P. antiscorbutica* R. Br. (Kerguelen cabbage), the only sp., has the habit of a cabbage, with the fls. borne on lat. axes. It grows only "on the tempestuous shores of Kerguelen's I., where winged insects cannot exist, because at every flight they run the risk of being drowned. Under these circumstances the plant has become modified for fert. by wind, acquiring exserted anthers and long filiform stigmatic papillae. It still retains traces of its descent from entomophilous ancestors; for while on the great part of the island it is devoid of petals, it occurs abundantly in shaded places with petals" (Müller).

Pringleochloa Scribner (*Opizia* p.p. *EP.*). Gramineae (II). 1 Mexico.

Pringleophytum A. Gray (*Berginia* p.p. *EP.*). Acanth. (IV. B). 1 Calif.

Prinos Gronov. ex L. = *Ilex* Tourn. p.p. (Aquifol.).

Prinsepia Royle. Rosaceae (V). 1 Himalaya.

- Printzia** Cass. Compositae (4). 5 S. Afr.
- Prionachne** Nees. Gramineae (9). 1 S. Afr.
- Prionanthium** Desv. (*Prionachne* p.p. *EP.*). Gram. (9). 3 Indomal., S. Afr.
- Prionitis** L. = *Barleria* L. p.p. (Acanth.).
- Prionium** E. Mey. Juncaceae. 1 Cape Col., *P. Palmita* E. Mey. (*P. serratum* Buchen.), the palmiet, a shrubby aloe-like plant with a stem 1—2 metres high, covered with the fibrous remains of old l. It grows on the edges of streams, sometimes almost blocking them up. Veg. propagation takes place by formation of runners. Adv. roots form between the l. [Buchenau in *Bibl. Bot.*, No. 27.]
- Prionophyllum** C. Koch (*Dyckia* p.p. *BH.*). Bromel. (2). 2 S. Braz., Urug.
- Prionosciadium** S. Wats. Umbelliferae (III. 6). 10 Mexico, C. Am.
- Prionotes** R. Br. Epacridaceae (1). 1 Tasmania.
- Prioria** Griseb. Leguminosae (II. 2). 1 Panama, Jamaica.
- Priotropis** Wight et Arn. Leguminosae (III. 3). 2 E. Himal., Socotra.
- Prismatocarpus** L'Herit. Campanulaceae (1). 15 S. Afr.
- Prismatomeris** Thw. Rubiaceae (II. 9). 1 Ceylon, India.
- Pritchardia** Seem. et H. Wendl. (excl. *Washingtonia* H. Wendl.). Palmae (I. 2). 5 Fiji, Hawaiian Is.
- Pritchardiopsis** Becc. Palmae (I. 2). 1 New Caledonia.
- Pritzelia** Klotzsch = *Begonia* L. p.p. (Begon.).
- Pritzelia** F. Muell. Philydraceae. 1 New Guinea.
- Priva** Adans. Verbenaceae (1). 10 trop. and subtrop. The l. of *P. echinata* Juss. are used as tea; tubers of *P. laevis* Juss. ed.
- Privet**, *Ligustrum vulgare* L.
- Probletostemon** K. Schum. Rubiaceae (I. 8). 1 Sierra Leone.
- Proboscella** Van Tiegh. Ochnaceae. 2 trop. Afr.
- Proboscidea** Schmid. (*Martynia* p.p.). Martyniaceae. 6 warm Am.
- Procerus** (Lat.), lofty.
- Process**, a projecting appendage.
- Prochnyanthes** S. Wats. Amaryllidaceae (II). 1 Mexico.
- Prockia** P. Br. ex L. Flacourtiaceae (5). 4 trop. Am.
- Prockiopsis** Baill. Flacourtiaceae (2). 1 Madag.
- Procris** Comm. ex Juss. Urticaceae (2). 5 palaeotrop.
- Proccumbent**, prostrate.
- Proliferous**, bearing offshoots.
- Prolification**, formation of buds in the axils of floral l.
- Promenaea** Lindl. (*Zygopetalum* p.p. *BH.*). Orchid. (II. β . II). 5 Braz.
- Promotion nut**, *Anacardium occidentale* L.
- Pronaya** Huegel. Pittosporaceae. 1 W. Austr.
- Pronuba** (moth), cf. *Yucca*.
- Propulsive mechanisms**, cf. Dispersal of Seeds.
- Proscaphalium** Korth. Rubiaceae (II. 5). 1 Java.
- Proserpinaca** L. Haloragidaceae. 2 N. Am. 3-merous. *Ann. Bot.* 18, 579.
- Prosopanche** de Bary. Hydnoraceae. 1 Argentina.

Prosopis L. Leguminosae (I. 4). 30 trop. and subtrop., some xero., without l., many thorny, the thorns being epidermal, or metamorphosed branches or stipules. *P. juliflora* DC. (trop. Am.) is the mezquit tree (fodder, &c.). *P. alba* Griseb. has sweet succulent pods (algaroba blanca), used as food.

Prosopostelma Baill. Asclepiadaceae (II. 1). 1 W. trop. Afr.

Prostanthera Labill. Labiatae (II). 40 Austr.

Prosthecidiscus J. Donnell Smith. Asclepiadaceae (II. 1). 1 Guatem.

Protamomum Ridl. Musaceae. 1 Malaya.

Protandry, *cf.* Dichogamy.

Protanthera Rafin. Liliaceae. Nomen. 2 N. Am.

Protarum Engl. Araceae (VII). 1 Seychelles.

Protea L. Proteaceae (I). 75 S. and trop. Afr. Fls. in showy heads, often with coloured bracts.

Proteaceae (EP., BH.). Dicotyledons (Archichl. Proteales; Daphnales BH.). 50 gen., 960 sp. "which have a very char. distr.; there are in Austr. 591, trop. E. As. 25, New Caled. 27, N.Z. 2, Chili 7, trop. S. Am. 36, south-west Cape Col. 262, Madag. 2, Mts. of trop. Afr. 5" (Engler). The great majority live in regions where there is annually a long dry season. Correlated with this is the fact that they are mostly xero. Nearly all shrubs and trees with entire or much-divided exstip. l., which have commonly a thick cuticle and often a covering of hairs further checking transpiration. The fls. are borne in racemes, spikes, heads, &c., and are often very showy; many have their pollen freely exposed, though they are not wind-fert.—a peculiarity perhaps connected with their life in a dry climate (compare the Acacias of Australia).

The fls. are usu. ♂, often ♂. P (4), corolline, valvate; the l. commonly bent or rolled back when open; sta. 4, inserted on the tepals, and usu. with only the anthers free; G 1, ovules many or few or one, pend. or not, the micropyle facing the base of the ovary. Style term., long, often bent inwards. Follicle, capsule, drupe or nut; seed exalbum. The ovary is sometimes borne on a gynophore and at its base are commonly nectarial outgrowths. The fls. are protandrous and adapted to insect-fert.

Classification and chief genera (see discussion in *Nat. Pfl.*):

I. **PERSOONIOIDEAE** (fls. single in axils of bracts; ovules seldom, few or 2; drupe or nut, one seeded): *Persoonia*, *Protea*, *Leucadendron*.

II. **GREVILLOIDEAE** (fls. in pairs; ovules several or 2; fr. usu. dehis., many seeded): *Grevillea*, *Hakea*, *Banksia*.

Proteales. The 13th order of Archichlamydeae.

Protection against grazing animals is obtained by stinging hairs (*Loasaceae*, *Urticaceae*, &c.), by prickles, &c., or by disagreeable taste; - of buds, see Bud; - of honey, *cf.* Flower-classes; - of flowers, see Flower-movements; - of leaves, see Movements; - of young leaves, *Anherstia*, *Brownea*, &c.

Proteids, complex organic bodies, containing C, H, O, and N.

Proteocarpus Börner = *Carex* L. p.p. (Cyper.).

Proteopsis Mart. et Zucc. Compositae (I). 2 campos of S. Braz.

Proterandry, -ogyny, protandry, &c. *cf.* Dichogamy.

Prothallus, the sexual pl.; *Pteridophyta*, *Filicineae*, &c.

Protium Burm. f. *Burseraceae*. 50 trop. Am. Some yield good balsam resins.

Proto- (Gr. pref.), first, earliest; **-corm**, *Lycopodiaceae*; **-gyny**, see *Dichogamy*; **-plasm**, the living substance of pl.

Protolirion Ridl. (*Petrosavia* p.p.). *Liliaceae* (1). 1 Mal. Penin.

Protomegabaria Hutchinson. *Euphorbiaceae* (A. I. 1). 2 trop. Afr.

Protorhus Engl. *Anacardiaceae* (3). 9 Madag., S. Afr.

Protoschwenkia Solereder. *Solanaceae* (5). 1 Bolivia.

Proustia Lag. *Compositae* (12). 10 Andes, temp. S. Am.

Proximal, nearest to axis.

Pruinose, with waxy powdery secretion on the surface.

Prumnopitys Phil. = *Podocarpus* L'Hérit. p.p. (Conif.).

Prune, *Prunus domestica* L.

Prunella L. (*Brunella* Tourn.). *Labiatae* (VI). *P. vulgaris* L. (self-heal) cosmop. (incl. Brit.), 5 Medit. Eur. The fr. K is closed and points up in dry air, but opens and stands horiz. in damp.

Prunus (Tourn.) L. (incl. *Amygdalus* Tourn., *Cerasus* Tourn.). *Rosaceae* (V). 85 N. temp.; a few trop. *P. insititia* L. (bullace), *P. spinosa* L. (sloe or blackthorn), *P. avium* L. (gean), *P. Padus* L. (bird-cherry), in Brit. The fl.-buds are laid down in August or September of the preceding year. There is 1 cpl., which gives rise to a drupe, while the hollow recept. usu. falls away. Many sp. are cult. for their fr., e.g. *P. Armeniaca* L. (apricot), *P. domestica* L. (plum, prune), *P. Amygdalus* Stokes (almond), *P. Persica* Stokes (peach, with its smooth-fruited variety the nectarine), *P. Cerasus* L. (cherry), &c. *P. Lauro-cerasus* L. is the cherry laurel; it has extra-floral nectaries on the backs of the l., showing as brownish patches against the midribs. The spines of some sp. are axillary, as in *Crataegus*.

Pruriens (Lat.), causing itching.

Przewalskia Maxim. *Solanaceae* (2). 2 C. As.

Psacalium Cass. = *Senecio* Tourn. p.p. (*BH*) = *Cacalia* L. p.p.

Psamma Beauv. = *Ammophila* Host. (Gram.).

Psammanthe Reichb. *Caryophyllaceae* (inc. sed.). Nomen.

Psammisia Klotzsch. *Ericaceae* (III. 2). 35 Andes, Guiana.

Psammogeton Edgew. *Umbelliferae* (III. 2). 4 W. As.

Psammogonum Nieuwland (*Polygonella* p.p.). *Polygon.* (II. 2). 2 N. Am.

Psammomoya Diels et Loesener. *Celastraceae*. 2 Austr.

Psammophilous, sand-loving.

Psammotropha Eckl. et Zeyh. *Phytolaccaceae* (*Aizo. BH*). 5 S. Afr.

Psathura Comm. ex Juss. *Rubiaceae* (II. 5). 6 Madag., Mascarenes.

Psathyranthus Ule. *Loranthaceae* (1). 1 Upper Amazon.

Psathyrotes A. Gray. *Compositae* (8). 4 W. U.S., North Mexico.

Psedera Necker ex Greene (*Ampelopsis*, &c. p.p.). *Vitaceae*. 10 N. temp. and subtrop.

Psednotrichia Hiern. *Compositae* (3). 1 trop. Afr.

Pselium Lour. (*Pericampylus BH*). *Menispermaceae*. 1 Cochinchina.

Psephellus Cass. = *Centaurea* L. p.p. (Comp.).

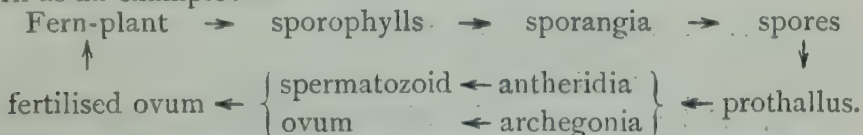
Pseud-, **pseudo-** (Gr. pref.), false; **-axis**, a sympodium; **-berry**, *Gaultheria*, *Urera*, *Viscum*; **-bulb**, *Orchidaceae*; **-carp**, the product of the

- ovary, together with any other organ that developes into the fr., *Pyrus*, *Rosa*. &c.; -**catkin**, *Humulus*; -**head**, *Maclura*, *Moraceae*, *Urticaceae*; -**panicle**, *Humulus*; -**raceme**, *Hypericum*, *Maclura*, *Moraceae*; -**spike**, *Moraceae*, *Morus*; -**umbel**, *Hypericum*, *Moraceae*.
- Pseudabutilon** R. E. Fries (*Abutilon* p.p.). Malv. (2). 10 warm Am.
- Pseudagrostistachys** Pax et K. Hoffm. (*Agrostistachys* p.p.). Euphorbiaceae (A. II. 2). 1 W. Afr.
- Pseudais** Decne. Thymelaeaceae. 1 Moluccas.
- Pseudalomia** Zoll. et Morr. Compositae. Nomen.
- Pseudanthistiria** Hook. f. (*Andropogon* p.p. *EP.*). Gramin. (2). 4 Indomal.
- Pseudanthus** Sieb. ex Spreng. Euphorbiaceae (B. I). 7 Austr.
- Pseudarthria** Wight et Arn. Leguminosae (III. 7). 5 Afr., trop. As.
- Pseuderanthemum** Radlkf. Acanth. (IV. B). 60 trop. Cult. orn. fl.
- Pseuderia** Schlechter. Orchidaceae (II. 15). 7 Malay Archipelago.
- Pseudibatia** Malme. Asclepiadaceae (II. 4). 4 S. Am.
- Pseudima** Radlk. (*Sapindus* p.p. *BH.*). Sapindaceae (I). 1 N. trop. S. Am.
- Pseudixus** Hayata. Loranthaceae (II). 1 E. As., Austr.
- Pseudobaeckea** Niedenzu. Bruniaceae. 7 S. Afr.
- Pseudobahia** A. Gray, Rydberg (*Monolopia* p.p.). Comp. (6). 2 Calif.
- Pseudobarleria** T. Anders. (*Petalidium* *BH.*). Acanth. (IV. A). 15 Afr.
- Pseudobastardia** Hassler (*Sida* p.p.). Malvaceae (2). 2 Brazil.
- Pseudoblepharis** Baill. Acanthaceae (IV. B). 5 trop. Afr.
- Pseudobotrys** Moes. Icacinaceae. 1 New Guinea.
- Pseudobravoa** Rose (*Bravoa* p.p.). Amaryllidaceae (II). 1 Mexico.
- Pseudobrayera** Korshinsky. Cruciferae (4). 1 C. As.
- Pseudobromus** K. Schum. (*Brachyelytrum* p.p.). Gramin. (8). 2 Afr.
- Pseudocadia** Harms (*Cadia* p.p.). Leguminosae (III. 1). 1 trop. Afr.
- Pseudocalyx** Radlk. Acanthaceae (III). 1 Madagascar.
- Pseudocarapa** Hemsl. Meliaceae (III). 1 Ceylon.
- Pseudocarpidium** Millsp. (*Vitex* p.p.). Verben. (4). 3 Cuba, Florida.
- Pseudocaryophyllus** Berg. = *Myrtus* Tourn. p.p. (*Myrt.*).
- Pseudocedrela** Harms (*Cedrela* p.p.). Meliaceae (II). 3 trop. Afr.
- Pseudocentrum** Lindl. Orchidaceae (II. 2). 8 trop. Am., W.I.
- Pseudochrosia** Blume. Apocynaceae (I. 3). 1 New Guinea.
- Pseudocinchona** A. Chevalier ex E. Perrot. Rubi. (I. 5). 1 trop. Afr.
- Pseudoclinium** O. Ktze. (*Leptoclinium* Gardn.). Comp. (2). 1 Goyaz.
- Pseudoconnarus** Radlk. (*Connarus* p.p.). Connaraceae. 1 Amazonas.
- Pseudocroton** Muell.-Arg. Euphorbiaceae (A. II. 2). 1 C. Am.
- Pseudocydonia** C. K. Schneider (*Chaenomeles* p.p.). Ros. (II). 1 China.
- Pseudocymopterus** Couler et Rose (*Cymopterus* p.p.). Umbelliferae (III. 6). 5 S.W. U.S.
- Pseudocynometra** O. Ktze. = *Maniltoa* Scheff. (Legum.).
- Pseudocytisus** O. Ktze. = *Vella* DC. (Crucif.).
- Pseudodracontium** N.E. Br. Araceae (IV). 3 Cochinchina.
- Pseudoernestia** Krasser (*Ernestia* p.p.). Melastom. (I). 1 Venezuela.
- Pseudoeugenia** Scortech. (*Eugenia* p.p. *EP.*). Myrt. (I). 2 Mal. Penin.
- Pseudogaltonia** O. Ktze. (*Hyacinthus* p.p.). Liliaceae v). 2 trop. Afr.

- Pseudogardneria** Raciborski (*Gardneria* p.p.). Logan. 2 E. As.
Pseudohamelia Wernham. Rubiaceae (I. 7). 1 trop. Am.
Pseudohydrosme Engl. Araceae (IV). 2 W. trop. Afr.
Pseudolachnostylis Pax. Euphorbiaceae (A. I. 1). 2 trop. Afr.
Pseudolarix Gord. Coniferae (Pinaceae, 21; see C. for gen. char.).
 1 China, *P. Kaempferi* Gord., the golden pine. Like *Larix*, but distinguished chiefly by the deciduous fruit-scales.
Pseudoliparis Finet (*Microstylis* p.p.). Orchid. (II. 4). 1 N. G.
Pseudolmedia Tréc. Moraceae (II). 5 trop. Am., W.I.
Pseudolopezia Rose (*Lopezia* p.p.). Onagraceae (2). 2 N. Am.
Pseudomachaerium Hassler. Leguminosae (III. 8). 1 Paraguay.
Pseudomacodes Rolfe. Orchidaceae (II. 2). 1 Solomon Is.
Pseudomarsdenia Baill. Asclepiadaceae (II. 3). 1 Mexico.
Pseudomorus Bar. Moraceae (I). 1 Norfolk I.
Pseudomussaenda Wernham. Rubiaceae (I. 7). 4 trop. Afr.
Pseudonephelium Radlk. (*Nephelium* p.p. *BH.*). Sapind. (I). 1 Borneo.
Pseudopanax C. Koch. Araliaceae (I). 6 temp. S. Am., N.Z.
Pseudopavonia Hassler. Malvaceae (3). 1 Paraguay.
Pseudopentatropis Costantin. Asclepiadaceae (II. 1). 1 Indochina.
Pseudophoenix H. Wendl. et Drude. Palmae (IV. 1). 1 Florida.
Pseudoprosopis Harms (*Prosopis* p.p.). Legumin. (I. 4). 1 trop. Afr.
Pseudopteris Baill. Sapindaceae (I). 1 Madag.
Pseudopteryxia Rydberg (*Cymopterus* p.p.). Umbell. (III. 5). 3
 Rockies.
Pseudopyxis Miq. Rubiaceae (II. 6). 1 Japan.
Pseudoreoxis Rydberg (*Cymopterus* p.p.). Umbell. (III. 5). 2 Rockies.
Pseudorlaya Murb. (*Daucus* p.p.). Umbelliferae (III. 8). 1 W. Eur.
Pseudorobanche Rouy (*Alectra* p.p.). Scrophular. (III. 2). 1 S. Afr.
Pseudosarcobolus Costantin. Asclepiadaceae (II. 3). 1 Indochina.
Pseudosassafras Lecomte. Lauraceae (I). 1 China.
Pseudosciadium Baill. Araliaceae (3). 1 New Caled.
Pseudoseris Baill. (*Gerbera* p.p. *EP.*). Compositae (12). 2 Madag.
Pseudosmodingium Engl. Anacardiaceae (3). 3 Mexico.
Pseudosopubia Engl. (*Sopubia* p.p.). Scrophul. (III. 2). 5 trop. Afr.
Pseudospondias Engl. Anacardiaceae (2). 2 W. and C. trop. Afr.
Pseudostachyum Munro. Gramineae (13). 1 Himalaya.
Pseudostenosiphonium Lindau (*Strobilanthes* p.p.). Acanthaceae (IV.
 A). 5 Ceylon.
Pseudostonium O. Ktze. = *Pseudostenosiphonium* Lindau (Acan.).
Pseudostreblus Bur. in DC. Moraceae (1). 2 Indomal.
Pseudotrigo Bonati. Scrophulariaceae (III. 2). 1 Cambodia.
Pseudotaenidia Mackenzie. Umbelliferae (III. 6). 1 N. Am.
Pseudotragia Pax. Euphorbiaceae (A. II. 2). 2 S.W. Afr.
Pseudotrophis Warburg. Moraceae (I). 2 New Guinea, Phil. Is.
Pseudotsuga Carr. (*Tsuga* Carr. p.p. *BH.*). Coniferae (Pinaceae, 15;
 see C. for gen. char.). 3 W. N. Am., E. As., incl. *P. Douglasii* Carr.
 (*P. mucronata* Sudw.), the Douglas fir of W. N. Am., useful for masts,
 &c.
Pseudoxalis Rose (*Oxalis* p.p.). Oxalidaceae. 1 Mexico.
Psiadia Jacq. Compositae (3). 35 Arabia, Afr., Madag.
Psidiastrum Bello. (*Eugenia* p.p. *EP.*). Myrtaceae (I). 1 Porto Rico.

- Psidiopsis** Berg. Myrtaceae (1). 1 Venezuela. Ed. fr.
- Psidium** L. Myrtaceae (1). 110 trop. Am., W.I. Many yield ed. fr.,
e.g. *P. Guajava* L., the guava.
- Psila** Phil. Compositae (4). 1 Chili.
- Psilactis** A. Gray. Compositae (3). 3 Mexico.
- Psilanthele** Lindau. Acanthaceae (1v. B). 3 trop. S. Am., Jamaica.
- Psilanthus** Hook. f. Rubiaceae (11. 4). 2 trop. W. Afr.
- Psilium** (Cl.), a prairie formation.
- Psilobium** Jack. Rubiaceae (1. 7). 2 Sumatra.
- Psilocarphus** Nutt. Compositae (4). 4 W. U.S., Chili.
- Psilocarya** Torr. (*Ryncospora* BH.). Cyperaceae (1). 6 Am., Austr.
- Psilochilus** Rodr. (*Cleistis* p.p. EP.). Orchid. (11. 2). 1 Brazil.
- Psilonema** C. A. Mey. = *Alyssum* L. (Crucif.).
- Psilopeganum** Hemsley. Rutaceae (1). 1 C. China.
- Psilostachys** Hochst. (*Psilotrichium* EP.). Amarant. (2). 4 trop. |*.
- Psilostrophe** DC. (*Riddellia* Nutt.). Compositae (6). 6 S.W. U.S.
- Psilotaceae**. Psilotales Two gen. (*Psilotum*, *Tmesipteris*) with 4 sp. trop. and subtrop. The mature sporophyte has no roots, their functions being performed by the branched rhiz. The aerial branches bear only scale-l. in *Psilotum*. The sporangia are 2- or 3-loc., borne on small two-lobed sporophylls. "There has been much disagreement as to the morphological nature of the sporangiophores of the Psilotaceae. The two chief views are the following: (1) that the whole sporangiophore is a single foliar member; (2) that it is a reduced axis bearing a terminal synangium and two l. The recent very careful researches of Bower upon the origin of the sporangiophore and synangium confirm the former view" (Campbell; see also Bower in *Phil. Trans.* CLXXXV, 1894, p. 473).
- "The fully-developed synangium (2-loc. in *Tmesipteris*, 3-loc. in *Psilotum*) has the outer walls of the loculi composed of a superficial layer of large cells, beneath which are several layers of smaller ones. The cells composing the septa are narrow tabular ones; occasionally the septum is partially absent....Bower regards the whole synangium as homologous with the single sporangium of *Lycopodium*" (Campbell). (The prothallus has not been seen.)
- Psilotales**. The 5th class of Pteridophyta.
- Psilotrichum** Blume. Amarantaceae (2). 15 palaeotrop.
- Psilotum** Sw. Psilotaceae. 3 trop. They are probably $\pm$ saprophytic in their habit, and have neither roots nor green l., but only green stems. See fam. for details of sporangia, &c. Veg. repr. is common, small gemmae being formed upon the rhiz. At first no structural differentiation is visible in these, but apical cells are formed later.
- Psiloxylon** Thou. ex Tul. (*Fropiera* BH.). Flacourt. (inc. sed.). 1 Masc.
- Psilurus** Trin. Gramineae (12). 1 S. Eur. to Afghanistan.
- Psittacanthus** Mart. (*Loranthus* p.p. BH.). Loranthaceae (1). 50 trop. Am.
- Psophocarpus** Neck. Leguminosae (111. 10). 5 palaeotrop. *P. tetragonolobus* DC. and others cult. ed. pods.
- Psoralea** L. Leguminosae (111. 6). 100 trop. and subtrop. *P. esculenta* Pursh (N. Am. prairie turnip) has ed. tuberous root.

- Psorospermum** Spach. Guttiferae (II). 20 trop. Afr., Madag.
Psychine Desf. Cruciferae (2). 1 N. Afr.
Psychotria L. (excl. *Mapourea* Aubl.). Rubiaceae (II. 5). 400 trop.
 Some heterostyled. Many have infl.-axis brightly coloured. [For
P. Ipecacuanha Stokes see *Uragoga*.]
Psychrobatia Greene (*Rubus* p.p.). Rosaceae (III. 2). 1 N.W. Am.
Psychrogeton Boiss. (*Aster* p.p. *BH.*). Compositae (3). 1 Afghanistan.
Psychrophyton Beauverd (*Raoulia* p.p.). Compositae (4). 9 N.Z.
Psyllium Tourn. ex Juss. = *Plantago* L. p.p. (*Plantag.*).
Psyllocarpus Mart. Rubiaceae (II. 10). 5 Brazil.
Psyllothamnus Oliv. Caryophyllaceae (I. 4). 1 Aden.
Ptaeroxylon Eckl. et Zeyh. Meliaceae (I) (*Sapind. BH.*). 1 S. Afr.,
P. utile E. et Z. (sneezewood, cape mahogany), timber.
Ptarmica (Tourn.) Neck. = *Achillea* L. p.p. (*Comp.*).
Ptelea L. Rutaceae (IV). 60 N. Am. *P. trifoliata* L. cult. orn. shrub
 (shrubby trefoil). Fls. monoec. Fr. winged (*cf. Ulmus*).
Pteleocarpa Oliv. Boragin. (II) (*Olacin. BH.*). 2 Malay Pen., Borneo.
Ptelidium Thou. Celastraceae. 1 Madag.
Pteleopsis Engl. Combretaceae. 4 E. trop. Afr.
Pteralyxia K. Schum. (*Vallesia* p.p.). Apocyn. (I. 3). 1 Hawaiian Is.
Pterandra A. Juss. Malpighiaceae (II). 1 Brazil.
Pteranthus Forsk. Caryophyllaceae (I. 6). 1 Medit.
Pterichis Lindl. Orchidaceae (II. 2). 6 trop. S. Am.
Pteridium Gled. 1 cosmop., *P. aquilinum* Kuhn, the bracken. It has
 a creeping rhiz., bearing 2 ranks of l. At the base of the l. is a nectary,
 which ants visit. The sori are confluent along the l. margin, which is
 curved over them, while there is also a true indusium on the inner side
 of the sori (the char. of distinction from *Pteris*, in which the bracken
 used to be placed). Adv. buds appear on the back of the l. stalk,
 near the base.
Pteridocalyx Wernham. Rubiaceae (I. 3). 1 Brit. Guiana.
Pteridophyllum Sieb. et Zucc. Papaveraceae (I). 1 Japan.
Pteridophyta. Vascular Cryptogams, one of the four chief divisions
 of the Vegetable Kingdom. They have a well marked alternation of
 generations, the gametophyte (oophyte or sexual generation) being
 insignificant in size compared to the sporophyte (asexual generation),
 but still capable of independent growth. The life history of a typical
 Pteridophyte may be shown diagrammatically as follows, taking the
 fern as an example:



The 'plant' or asexual generation alternates with the prothallus or sexual generation. In many P. there are ♂ and ♀ prothalli. The prothallus corresponds to the 'plant' in a moss or liverwort, whilst the sporogonium of these latter = 'plant' in a fern or lycopod.

The plant itself takes various forms in the different groups. Except in tree ferns and in fossil forms it does not attain great size. There is an erect stem in many ferns, &c.; others have creeping stems (*e.g.* *Lycopodium* and *Selaginella*), rhiz. (many Ferns), or floating

stems (Hydropterideae). The l. are simple, except in many ferns. There is no primary tap-root, but roots are formed as required from the stem or l. Internally there are well marked vascular bundles in both stem and leaf, and many anatomical features of flg. pl. may be found here also.

The sporangia arise upon the l., either on the ordinary foliage as in most ferns, or on specially differentiated l. as in *Osmunda*, *Equisetum*, *Lycopodiales*. *Hydropteridineae*, &c. They may be sol. or in groups (*sori*); in the latter case often protected by a special outgrowth of the l., the *indusium*. The spores are formed by a complicated process from a single cell or row or layer of cells—the *archesporium*—inside the sporangium: each has a thick waterproof outside wall. The spores may be of one kind only, in which case the plant is termed *homo-* or *iso-sporous*, or of two kinds (*heterosporous*), when the smaller spore is termed the *microspore*, the larger the *mega-* or *macro-spore*; the former gives rise to a ♂ prothallus, the latter to a ♀.

Falling upon the soil (or into the water, in the case of the *Hydropteridineae*) the spores germinate under suitable conditions, giving rise to the *sexual* plants or *prothalli*. The prothallus is a small body without distinction into stem and l.; it absorbs materials from the soil (usually by rhizoids) and, being green, assimilates in the ordinary way. It bears the sexual organs—*antheridia* (♂) and *archegonia* (♀). In the homosporous forms these are both found on the same prothallus, except in *Equisetum*, where, though the spores are absolutely similar so far as we can tell, there are separate ♂ and ♀ prothalli, as in the heterosporous forms. In the antheridia are developed the motile ♂ cells or *spermatozoids*. Fert. takes place by aid of water. The mucilage contained in the neck of the archegonium is attractive to the spermatozoids, which swim up the neck of the archegonium. One of them finally fuses with the ovum or ♀ cell at the base of the archegonium, and the fertilised ovum (*zygote*) then develops into a new 'plant' or asexual generation, being nourished by the prothallus until it can assimilate for itself.

Classification (after Engler):

- I. *Filicales*. L. usu. more strongly developed than stem, often big and much branched, usu. circinate in veneration. Sporangia on normal or special l., on edge or lower side, usu. in *sori*. Spermatozoid polyciliate.
 1. *Filicales Leptosporangiatæ*.
 2. *Marattiales*.
 3. *Ophioglossales*.
- [II. *Sphenophyllales*. Fossil plants only.]
- III. *Equisetales*. Homosporous (some fossils heterosporous), with dioec. prothalli. Stem much branched with jointed internodes and small sheathing whorls of l. (not green). Sporangia on peltate sporangiophores, forming a term. spike. Spermatozoids polyciliate.
- IV. *Lycopodiales*. Homosporous or heterosporous; in the latter case the ♀ prothallus remains enclosed in the spore till fert. Stem simple or branched; l. many, small, usu. alt., entire.

Sporangia singly on upper side of leaf-bases, or in their axils. Spermatozoids biciliate.

1. Lycopodiales eligulatae.

2. Lycopodiales ligulatae.

V. *Psilotales*. Sporophylls bipartite. Sporangia 2—3-loc. Spermatozoids biciliate.

VI. *Isoetales*. Stem short, growing in thickness, with numerous long l. with ligula over a basal groove, in which is a sporangium; megaspores on outer sporophylls, microspores on inner. Spermatozoids polyciliate.

[VII. *Cycadofilices*. Fossil plants only.]

Pterigeron A. Gray. Compositae (4). 7 Austr.

Pterigostachyum Nees ex Steud. (*Dimeria* R. Br.). Gram. (2). 12 S.E. As.

Pteris L. Polypodiaceae. 160 cosmop. [For *P. aquilina* L., the bracken, see *Pteridium*.] Apogamy occurs in *P. cretica* L. (see Filicales Leptosporangiateae).

Pterisanthes Blume. Vitaceae. 12 trop. As.

Pternandra Jack. Melastomaceae (11). 6 Malaya.

Pternopetalum Franch. Umbelliferae (III. 5). 1 Tibet.

Ptero- (Gr. pref.), wing.

Pterocactus K. Schum. Cactaceae (11). 3 Argentina.

Pterocarpus L. Leguminosae (III. 8). 24 trop. Fruit winged. Several, esp. *P. Marsupium* Roxb., furnish kino, an astringent resin. *P. santalinus* L. f. yields red sandal-wood.

Pterocarya Kunth. Juglandaceae. 4 N. temp. |*.

Pterocaulon Ell. Compositae (4). 15 Argentina to Texas.

Pterocelastrus Meissn. Celastraceae. 7 Cape Colony.

Pteroceltis Maxim. Ulmaceae. 1 N. China.

Pterocephalus Vaill. ex Adans. (*Scabiosa* p.p. *BH.*). Dipsacaceae. 20 Medit., Indomal., trop. Afr.

Pterochrosia Baill. Apocynaceae (I. 3). 1 New Caled.

Pterocladon Hook. f. Melastomaceae (1). 1 Peru.

Pterococcus Pall. = *Calligonum* L. p.p. (Polygon.).

Pterocoelion Turcz. Tiliaceae (inc. sed.). 1 Java.

Pterocymbium R. Br. (*Sterculia* p.p. *BH.*). Stercul. 5 Burma, Malaya.

Pterodiscus Hook. Pedaliaceae. 10 S. and trop. Afr.

Pterodon Vog. Leguminosae (III. 8). 4 Brazil, Bolivia.

Pterogastra Naud. Melastomaceae (1). 3 N. trop. S. Am.

Pteroglossaspis Reichb. f. Orchidaceae (II. 10). 3 E. trop. Afr.

Pterogonium Fee. Polypodiaceae. 2 Guiana.

Pterogyne Tul. Leguminosae (II. 2). 1 Brazil.

Pterolepis Miq. Melastomaceae (1). 30 trop. Am.

Pterolobium R. Br. (*Cantuffa* *EP.*). Leguminosae (II. 7). 5 palaeotrop.

Pteronema Pierre. Simarubaceae. 1 Burma.

Pteroneurum DC. = *Cardamine* Tourn. p.p. (Crucif.).

Pteronia L. Compositae (3). 60 S. Afr.

Pteropetalum Pax (*Euadenia* p.p. *EP.*). Capparid. (II). 1 Togoland.

Pteropogon DC. = *Helipterum* DC. p.p. (Comp.).

Pteropyrum Jaub. et Spach. Polygonaceae (II. 1). 5 S.W. As.

- Pterorhachis** Harms. Meliaceae (III). 1 Cameroons.
Pteroscleria Nees. Cyperaceae (II). 3 trop. Am., W. I.
Pterosicyos T. S. Brandege. Cucurbitaceae (4). 1 Mexico.
Pterospermum Schreb. Sterculiaceae. 20 trop. As.
Pterospira Nutt. Pyrolaceae. 1 N. Am.
Pterostegia Fisch. et Mey. Polygonaceae (I. 1). 1 California.
Pterostemma Kränzl. Orchidaceae (II. 19). 1 Colombia.
Pterostemon Schau. Saxifragaceae (IV). 1 Mexico.
Pterostigma Benth. = *Adenosma* R. Br. p.p. (Scroph.).
Pterostylis R. Br. Orchidaceae (II. 2). 45 Austr., N.Z., New Caled.
 The median sepal, with the petals, forms a hood over the rest of the fl. The flap of the labellum hangs out below and is irritable. If an insect land on it, it instantly moves up and imprisons the visitor against the column; the only mode of escape is by squeezing past the stigma and anther. After half-an-hour the lip goes down again and is ready for another capture (Darwin, *Orchids*, p. 86).
Pterostyrax Sieb. et Zucc. (*Halesia* p.p.). Styrac. 3 Japan, China.
Pterotaberna Stapf (*Tabernaemontana* p.p.). Apocyn. (I. 3). 1 W. Afr.
Pterotheca Cass. Compositae (13). 10 Medit., W. As.
Pterothrix DC. Compositae (4). 3 Cape Colony.
Pterotropia Hillebrand. Araliaceae (1). 3 Hawaiian Is.
Pterotum Lour. Inc. sed. 1 Cochinchina.
Pteroxygonum Dammer et Diels. Polygonaceae (II. 2). 1 China.
Pterygiella Oliv. Scrophulariaceae (III. 3). 2 China.
Pterygodium Sw. Orchidaceae (II. 1). 15 S. Afr.
Pterygopappus Hook. f. Compositae (4). 1 Tasmania.
Pterygopodium Harms. Leguminosae (III. 8). 1 Cameroons.
Pterygota Schott. et Endl. (*Sterculia* p.p. *BH.*). Stercul. 4 trop. ✱.
Pteryxia Nutt. (*Cymopterus* p.p.). Umbelliferae (III. 5). 7 N. Am.
Ptilimnium Rafin. (*Discopleura* p.p.). Umbell. (III. 5). 3 N. Am.
Ptilocalais A. Gray, Greene (*Microseris* p.p.). Comp. (13). 1 N. Am.
Ptilochaeta Turcz. Malpighiaceae (1). 3 Brazil, Argentina.
Ptilotrichum C. A. Mey. (*Alyssum* p.p. *BH.*). Cruciferae (4). 10 Medit.
Ptilotus R. Br. Amarantaceae (2). 60 Austr.
Ptychandra Scheff. Palmae (IV. 1). 2 Moluccas.
Ptychanthera Decne. Asclepiadaceae (II. 4). 1 S. Domingo.
Ptychococcus Becc. Palmae (IV. 1). 3 New Guinea, Moluccas.
Ptychogyne Pfitz. (*Panisea* p.p.). Orchid. (II. 3). 2 Mal. Pen., Java.
Ptychomeria Benth. = *Gymnosiphon* Blume (Burm.).
Ptychopetalum Benth. Olacaceae. 6 trop. Am., W. Afr.
Ptychopyxis Miq. Euphorbiaceae (inc. sed.). 1 Malaya.
Ptychoraphis Becc. Palmae (IV. 1). 3 Malaya.
Ptychosema Benth. Leguminosae (III. 6). 1 W. Austr.
Ptychosperma Labill. Palmae (IV. 1). 15 E. Indomal. Fls. in threes, 2 ♂ and 1 ♀. *P. (Seaforthia) elegans* Blume cult. orn.
Ptychotis Koch (*Carum* p.p. *BH.*). Umbelliferae (III. 5). 6 Eur., Afr.
Ptyssiglottis T. Anders. Acanthaceae (IV. B). 5 Indomal.
Puberulous, minutely pubescent.
Pubescent, covered with fine soft hairs, downy.
Puccinia, cf. *Malva*.

- Puccoon** (Am.), *Lithospermum*, *Sanguinaria*; **yellow -**, *Hydrastis*.
Pudding-pipe tree, *Cassia*.
Puelia Franch. Gramineae (13). 4 W. trop. Afr.
Pueraria DC. Leguminosae (III. 10). 15 trop. As. to Japan. Fibre.
Pugionium Gaertn. Cruciferae (4). 2 Mongolia.
Pugiopappus A. Gray (*Leptosyne* BH., *Coreopsis* p.p. EP.). Compositae (5). 3 California.
Pulcheilus (Lat.), beautiful.
Pulicaria Gaertn. Compositae (4). 30 Eur., As., Afr. *P. dysenterica* Gaertn. (*Inula dysenterica* L.) in Brit. (flea-bane).
Pullea Schlechter. Cunoniaceae. 2 New Guinea.
Pulmonaria (Tourn.) L. Boraginaceae (IV. 3). 10 Eur. *P. officinalis* L. (lung-wort, formerly officinal) and *P. angustifolia* L. in Brit. Both have dimorphic heterostyled fls. which change from red to blue as they grow older (see fam.).
Pulque, *Agave*.
Pulsatilla (Tourn.) L. = *Anemone* Tourn. p.p. (Ranunc.).
Pultenaea Sm. Leguminosae (III. 2). 80 Austr.,
Pulvinaria Fourn. Asclepiadaceae (II. 1). 1 Brazil.
Pulvinate, cushion-shaped.
Pulvinus, a swollen joint, often concerned in movement, *Galeopsis*, *Marantaceae*, *Mimosa*, *Neptunia*.
Pumelo, *Citrus decumana* Murr.
Pumilus (Lat.), low, small.
Pumpkin, *Cucurbita Pepo* L.
Punctate, dotted.
Punctum vegetationis (Lat.), growing point.
Pungens (Lat.), sharp-pointed.
Punica (Tourn.) L. Punicaceae (only genus). 2, one in Socotra, the other, *P. Granatum* L., the pomegranate, from the Balkans to the Himalayas, and cult. The young twigs have four wings, composed simply of epidermis and cortical parenchyma; these are early thrown off. The fl. is ♂, reg., perig. K 5—8, valvate; C 5—8, imbr.; A ∞; G adnate to receptacle. The mature ovary has a peculiar structure, due to a development like that in *Mesembryanthemum*. Two whorls of cpls. with basal plac. are laid down, and then a peripheral growth tilts them up from ||•|| to =•= so that two layers of loculi are formed and the placentation appears to be parietal. Ovules ∞, anatropous. The arrangement is also seen in the fr., commonly termed a berry, but not strictly so. The pericarp (axial in part) is leathery, and the fleshy inner part round the seeds is really the outer layers of the seed coats.
Punicaceae (EP.; *Lythraceae* p.p. BH.). Dicots. (Archichl. Myrtiflorae). Only genus *Punica* (q.v.).
Puniceus (Lat.), bright carmine.
Pupalia Juss. Amarantaceae (2). 7 Afr., Madag., As.
Pupunha palm, *Bactris*.
Purdiaea Planch. (*Costaea* EP.). Cyrillaceae. 3 Cuba, Colombia.
Purdieanthus Gilg. Gentianaceae (1). 1 Colombia.
Purging buckthorn, *Rhamnus cathartica* L.; -cassia, *Cassia Pistula* L.; -flax, *Linum catharticum* L.

Purgosea Haw. = *Crassula* L. (Crassul.).

Purple heart (W.I.), *Copaifera*; - **lip** (W.I.), *Vanilla*; - **loosestrife**, *Lythrum Salicaria* L.; - **top** (Austr.), *Verbena*.

Purpurella Naud. (*Tibouchina* BH.). Melastomaceae (8). 12 trop. S. Am.

Purpureus (Lat.), purple.

Purpusia T. S. Brandege. Rosaceae (III. 2). 1 N. Am.

Purshia DC. Rosaceae (III. 3). 1 Pac. U.S.

Purslane, *Portulaca*; **sea-**, *Arenaria peploides* L.

Pusaetha L. (*Entada* Adans.). Leguminosae (I. 5). 12 trop.

Puschkinia Adams. Liliaceae (v). 2 W. As. Cult. orn. fl.

Pusillus (Lat.), small, weak, slender.

Pustule, a pimple or blister.

Putamen, the stone of a drupe.

Putoria Pers. Rubiaceae (II. 7). 3 Medit.

Putranjiva Wall. Euphorbiaceae (A. I. 1). 4 Indomal.

Putterlickia Endl. Celastraceae. 2 Cape Colony.

Puya Molina. Bromeliaceae (2). 25 Andes. Some 3 m. high, thick stem.

Pycnandra Benth. Sapotaceae (I). 1 New Caled.

Pycnanthemum Michx. Labiatae (VI). 15 N. Am.

Pycnanthus Warb. (*Myristica* p.p.). Myristicaceae. 5 trop. Afr.

Pycnarrhena Miers. Menispermaceae. 20 E. Indomal.

Pycnobotrya Benth. Apocynaceae (II. 1). 1 Gaboon.

Pycnobregma Baill. Asclepiadaceae (II. 4). 1 Colombia.

Pycnocomma Benth. Euphorbiaceae (A. II. 2). 12 trop. Afr., Masc.

Pycnocomon Hoffmgg. et Link (*Scabiosa* p.p. BH.). Dipsac. 2 Medit.

Pycnocycla Lindl. Umbelliferae (III. 1). 7 Abyssinia to N.W. India.

Pycnoneurum Decne. Asclepiadaceae (II. 1). 2 Madag.

Pycnophyllum Remy. Caryophyllaceae (I. 3). 3 Andes.

Pycnorhachis Benth. Asclepiadaceae (II. 3). 1 Malay Peninsula.

Pycnosphaera Gilg (*Farea* p.p.). Gentianaceae (I). 2 trop. Afr.

Pycnospora R. Br. ex Wight et Arn. Legumin. (III. 7). 1 trop. As., Austr.

Pycnostachys Hook. Labiatae (VII). 15 trop. and S. Afr., Madag.

Pycnostelma Bunge ex Decne. Asclepiadaceae (II. 1). 2 China.

Pycnostylis Pierre. Menispermaceae. 1 trop. Afr.

Pycnothymus Small (*Satureia* p.p.). Labiatae (VI). 1 N. Am.

Pycreus Beauv. (*Cyperus* p.p. EP.). Cyperaceae (I). 100 cosmop.

Pygeum Gaertn. Rosaceae (v). 20 palaeotrop.

Pygmaepremna Merrill. Verbenaceae (4). 1 Luzon.

Pygmaeus (Lat.), dwarf.

Pynaertia De Wild. Meliaceae (III). 1 Congo.

Pyramia Cham. Melastomaceae (I). 3 S. Brazil.

Pyramidium Boiss. Cruciferae (4). 1 Afghanistan.

Pyramidocarpus Oliv. Flacourtiaceae (I). 1 W. trop. Afr.

Pyramidoptera Boiss. Umbelliferae (III. 5). 1 Afghanistan.

Pyramidostylium Mart. = *Salacia* L. (Hippocrat.).

Pyrecnia Nor. Inc. sed. Nomen.

Pyrenacantha Wight. Icacinaceae. 10 S. and trop. Afr., W. As.

Pyrenaria Blume. Theaceae. 11 Indomal.

Pyrene, a single stone of a drupe.

Pyrethrum Hall. = *Chrysanthemum* Tourn. (Comp.).

Pyriform, pear-shaped.

Pyrola (Tourn.) L. (incl. *Moneses* Salisb.). Pyrolaceae. 15 N. temp. (5 Brit., wintergreen). Evergreens with creeping stocks. *P. (Moneses) uniflora* L. has adv. buds on the roots, and a solitary term. fl. The fls. of *P. minor* L. are in racemes, pend., without discs. There is no honey; the stigma projects beyond the anthers, but pollen may at last fall upon it from them. *P. rotundifolia* L. is similar. The seeds of *P.* are very light and are distr. by wind.

Pyrolaceae (EP.; *Ericaceae* p.p., *Monotropeae* BH.). Dicots. (Sympet. Ericales). 10 gen., 30 sp., cold N. temp. and arctic. The two Brit. genera represent the two types of habit found in the order—evergreen plants with sympodial growth from rhiz. (*Pyrola*), and saprophytes (*Monotropa*). The infl. is term.; it may be a true raceme (*Pyrola*), or a cyme, leafless or with scaly bracts. Fl. ♂ actinom. K 4—5; C (4—5) or 4—5; A 8—10, obdiplost.; G (4—5). The petals and sta. are often at the edge of a nectariferous disc. Anthers intr., opening by apical pores or transv. valves; pollen simple or in tetrads. Cpls. opp. petals; ovary imperfectly 4—5-loc. Style simple; ovules minute, ∞, anat., on thick fleshy plac. Capsule. Seeds ∞, small, in loose testa. Embryo of few cells, without differentiation of cotyledons. *Chief genera*: *Pyrola*, *Chimaphila*, *Monotropa*, *Sarcodes*. BH. unite *Pyrola* and the green-leaved forms to *Ericaceae*, making a fam. *Monotropeae* for the saprophytes.

Pyronia × Veitch. Rosaceae. Hybrid, *Pyrus*-*Cydonia* (pear and quince). See *Journ. of Hered.* 1916, p. 416.

Pyrostegia C. Presl (*Bignonia* p.p. BH.). Bignon. (1). 10 S. Am.

Pyrostria Comm. ex Juss. Rubiaceae (11. 1). 8 Mauritius, Rodrigues.

Pyrrophappus DC. (*Sitilius* Rafin.). Compositae (13). 6 N. Am.

Pyrrocoma Hook. (*Aplopappus* Cass.). Compositae (3). 20 N. Am.

Pyricularia Michx. Santalaceae. 2 N. Am., Himalaya.

Pyrus (Tourn.) L. (BH. incl. *Cydonia*, *Mespilus*). Rosaceae (11). 65 N. temp.; 6 in Brit., incl. *P. Aucuparia* Ehrh., the rowan or mountain ash, *P. Malus* L. the apple, &c. The recept is hollowed out and united to the syncarpous ovary. The fls. are protogynous, and are visited by bees and many other insects. Several var. of pear (*P. communis* L.) are self-sterile. After fert. the fr. becomes a large fleshy pseudocarp (*pome*), the flesh consisting of the enlarged recept., while the gynaeceum forms the core. Several are cultivated for their fruit, e.g. *P. Malus* L. (apple), *P. communis* L. (pear), *P. germanica* Hook. f. (medlar). *P. japonica* Thunb. is often grown upon walls.

Pyxidanthera Michx. Diapensiaceae. 1 E. U.S.

Pyxidanthus Naud. (*Blakea* BH.). Melastomaceae (1). 3 N. trop. S. Am.

Pyxis, capsule opening by a lid that splits off, *Anagallis*.

Quadrantia Nor. Inc. sed. Nomen.

Quadrasia Elmer. Flacourtiaceae (4). 1 Phil. Is.

Quadri- (Lat. pref.), four.

Quaternate, arranged in fours.

Quake-grass, *Briza*.

Qualea Aubl. Vochysiaceae. 32 trop. Am.

Quamash, *Camassia*.

Quamoclidion Choisy (*Mirabilis* p.p.). Nyctaginaceae. 4 N. Am.

Quamoclit Tourn. ex Moench (*Ipomoea* p.p. *BH.*). Convolvulaceae (1). 12 trop. Am. Cult. orn. fl.

Quapoya Aubl. (*Clusia* p.p. *BH.*). Guttiferae (IV). 3 Guiana, Peru.

Quaqua N.E. Br. (*Caralluma* *EP.*). Asclepiadaceae (II. 3). 1 S. Afr.

Quaquaversal, bending every way.

Quararibea Aubl. Bombacaceae. 7 warm Am.

Quartinia Endl. (*Rotala* p.p. *EP.*). Lythraceae. 1 Abyssinia.

Quassia L. Simarubaceae. 2 N.E. Brazil, W. Afr., *Q. amara* L. (Am.), is the source of quassia wood.

Quassia bark, *Picraena*, *Quassia*; - **wood**, *Quassia*.

Quebec oak, *Quercus alba* L.

Quebrachia Griseb. (*Schinopsis* *EP.*). Anacardiaceae (3). 5 S. Am.

Quebracho, *Schinopsis*, *Aspidosperma*.

Queen-of-the-meadow, *Ulmaria Spiraea-Ulmaria* Hill.

Queensland nut, *Macadamia ternifolia* F. Muell.

Quekettia Lindl. Orchidaceae (II. 19). 3 Brazil.

Quelchia N.E. Br. Compositae (12). 1 Roraima (Brit. Guiana).

Queltia Salisb. = *Narcissus* Tourn. p.p. (Amaryll.).

Quercitron bark, *Quercus tinctoria* Bartr.

Quercus (Tourn.) L. (*BH.* incl. *Pasania* Oerst.). Fagaceae. 300 N. temp., Indomal., Pacific coasts, &c. The oaks are evergreen or deciduous trees, in the latter case esp. with well-developed winter buds. The cupule contains 1 ♀ fl. only (see fam.), and forms the acorn-cup at the base of the nut in fr. The ♂ fls. are sol. in pend. catkins. Anemoph. Many are important economic plants. Among the most noteworthy are: *Q. Aegilops* L. (E. Eur., W. As.), whose cupules and unripe acorns, known as valonia, are used in tanning, *Q. alba* L. (N. Am.), the white or Quebec oak (timber), *Q. Cerris* L. (Eur., W. As.), the Turkey oak (timber), *Q. Ilex* L. (Medit.), the holly oak (timber, bark for tanning), *Q. Robur* L. (Eur., W. As.), the British oak (it has two forms, *sessiliflora* Salisb., and *pedunculata* Ehrh.), yielding timber and tan bark, *Q. Suber* L. (Medit.), the cork oak, whose bark, stripped off in thick layers and flattened, forms ordinary cork, *Q. tinctoria* Bartr. (N. Am.), whose bark (quercitron bark) forms a yellow dye, and many others.

Queria Loeff. Caryophyllaceae (I. 1). 1 Medit.

Quesnelia Gaudich. Bromeliaceae (4). 6 S. Am.

Queteletia Blume (*Physurus* p.p. *BH.*). Orchidaceae (II. 2). 1 Java.

Quickset thorn, *Crataegus Oxyacantha* L.

Quiina Aubl. Quiinaceae. 18 trop. S. Am.

Quiinaceae (*EP.*; Guttiferae p.p. *BH.*). Dicots. (Archichl. Parietales). 2 gen., 20 sp., trop. S. Am. Shrubs and trees with evergr. exstip. l. and small fls. in racemes or panicles, reg., ♀ or ♂ ♀. K, C 4—5, A 15—30, G (2—3) or (7) each with 2 axile ovules, and separate styles. Berry valvate with felted seeds.

Quil-wort, *Isoetes*.

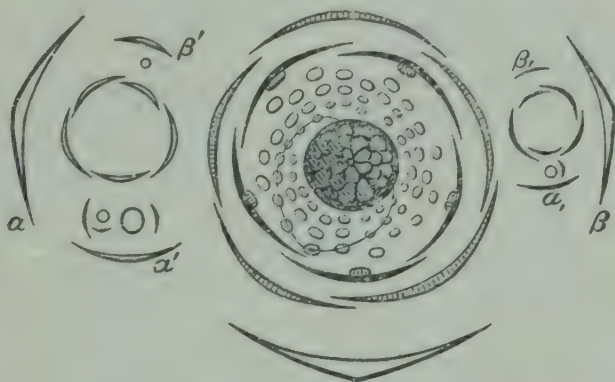
Quillaja Molina. Rosaceae (I. 2). 3 temp. S. Am. *Q. Saponaria* Molina is the soap-tree of Chili; the powdered bark lathers with water.

- Quinaria** Rafn. (*Vitis* p.p. *BH.*, *Parthenocissus* *EP.*). Vitaceae. 10 temp. As.; Am.
- Quinary**, in fives.
- Quince**, *Cydonia vulgaris* Pers.; **Bengal-**, *Aegle Marmelos* Corr.
- Quinchamalium** Juss. Santalaceae. 20 Andes.
- Quincuncial**, see Aestivation.
- Quinetia** Cass. Compositae (4). 1 W. Austr.
- Quinine**, *Cinchona*, *Remijia*.
- Quinoa**, *Chenopodium Quinoa* Willd.
- Quinque-** (Lat. pref.), five.
- Quintinia** A. DC. Saxifragaceae (v). 5 E. Austr., N.Z.
- Quisqualis** L. Combretaceae. 4 trop. Afr., As. *Q. indica* L. is erect below, ± twining above, with alt. l. Fl. shoots with opp. l.
- Quivisia** Comm. ex Juss. Meliaceae (III). 1 Madag., Mascarenes.
- Quivisiantha** Baill. Meliaceae (III). 1 Madag.
- Racaria** Aubl. (*Talisia* p.p. *EP.*). Sapindaceae (I). 1 Guiana.
- Raceme**, an infl. with main stem that grows steadily onwards, bearing fls. on lat. branches in acropetal succession, *Cruciferae*, *Ribes*; **racemose**, of racemes or of raceme type.
- Rachicallis** DC. Rubiaceae (I. 3). 1 W.I.
- Rachis**, the stalk of a cpd. l.
- Racletia** Adans. Inc. sed. Nomen.
- Radackia** Cham. et Endl. Leguminosae (inc. sed.). 1 Radack I.
- Radamaea** Benth. Scrophulariaceae (III. 2). 2 Madag.
- Raddia** Spreng. = *Salacia* L. (Hippocrat.).
- Radermachera** Zoll. et Morr. Bignoniaceae (2). 8 Indomal.
- Radial symmetry**, where the organ, &c. is divisible into two complementary halves by any plane including the axis.
- Radiate stigma**, *Papaver*.
- Radical** (l.), apparently springing from the root, *Anemone*.
- Radicans** (Lat.), rooting.
- Radicle**, the rootlet starting from the embryo in the seed.
- Radicula** Dill. (*Nasturtium* p.p.). Cruciferae (2). 20 N. Am.
- Radinocion** Ridl. (*Angraecum* p.p. *EP.*). Orchid. (II. 20). 1 S. Thomas.
- Radiola** (Dill.) Roth. Linaceae. 1 Eur. (incl. Brit.), N. Afr., temp. As., *R. linoides* Roth (all-seed). Infl. a dichasial cyme.
- Radish**, *Raphanus sativus* L.; **horse -**, *Cochlearia Armoracia* L.; **Japanese -**, or Daikon, *Raphanus sativus* L. (?).
- Radix Columba**, *Jateorhiza*; - **Pareirae bravæ**, *Chondodendron*.
- Radlkofera** Gilg. Sapindaceae (I). 1 Cameroons.
- Radlkoferella** Pierre (*Lucuma* p.p.). Sapotaceae (I). 5 W.I.
- Raffenaldia** Godr. (*Cossonia* p.p. *EP.*). Cruciferae (2). 1 Algeria.
- Rafflesia** R. Br. Rafflesiaceae. 6 Malaya; parasitic on *Vitis* roots. *R. Arnoldi* R. Br. has a colossal fl. a yard across and weighing 15 lbs. It smells like putrid meat, and is visited by carrion flies.
- Rafflesiaceae** (*EP.*; *Cytinaceae* p.p. *BH.*). Dicots. (Archichl. Aristolochiales). 7 gen., 22 sp., trop. Parasitic herbs, whose veg. organs are reduced to what is practically a *mycelium* like that of a true Fungus, viz. a network of fine cellular threads ramifying in the tissues of the host. The fls. appear above ground, developing as adv. shoots upon the mycelium. They are unisexual, sometimes of enormous

- size, reg., haplocllam. P (4—5), A ∞ on a column, $\bar{G}$ (4—6—8), with parietal plac., or ∞ twisted loc. Berry. Endosp. *Chief genera:*
Rafflesia, *Brugmansia*, *Pilostyles*, *Cytinus*.
- Rafinesquia** Nutt. Compositae (13). 2 W. U.S.
- Rafnia** Thunb. Leguminosae (III. 3). 22 S. Afr.
- Ragala** Pierre (*Ecclinusa* Mart.). Sapotaceae (1). 1 French Guiana.
- Ragged robin**, *Lychnis Flos-Cuculi* L.
- Ragi** (India), *Eleusine Coracana* Gaertn.
- Ragweed** (Am.), *Ambrosia*; -wort, *Senecio Jacobaea* L.
- Raillardella** Benth. Compositae (8). 5 Mts. of California.
- Raillardia** Gaudich. Compositae (5). 12 Hawaiian Is.
- Raimannia** Rose (*Oenothera* p.p.). Onagraceae (2). 12 N. Am.
- Raimondia** Safford. Anonaceae (4). 1 Colombia..
- Rain tree**, *Pithecolobium Saman* Benth., *Andira inermis* H. B. K.
- Rainiera** Greene (*Prenanthes* p.p.). Compositae (13). 1 N. Am.
- Raisin**, *Vitis vinifera* L., &c.
- Rajania** L. Dioscoreaceae. 6 W.I.
- Ramatuela** H. B. et K. Combretaceae. 2 trop. Am.
- Rambong**, *Ficus elastica* Roxb.
- Rambutan**, *Nephelium lappaceum* L.
- Ramelia** Baill. Euphorbiaceae (A. II. 2). 1 New Caledonia.
- Ramenta**, chaffy scales.
- Rameya** Baill. Menispermaceae. 2 Madag., Comoros.
- Ramie**, *Boehmeria nivea* Gaudich., var. *tenacissima*.
- Ramirezella** Rose (*Vigna* p.p.). Leguminosae (III. 10). 5 Mexico.
- Ramisia** Glaziou ex Baill. Nyctaginaceae. 1 Rio de Janeiro.
- Ramona** Greene (*Audibertia* Benth.). Labiatae (VI). 10 N. Am.
- Ramondia** Rich. Gesneriaceae (1). 4 Mts. of S. Eur. Fl. almost reg. with 5 sta. and rotate C.
- Ramose**, freely branching.
- Ramosia** Merrill. Gramineae (10). 1 Phil. Is.
- Rampion**, *Phyteuma*.
- Ramsons**, *Allium ursinum* L.
- Ramsted** (Am.), *Linaria vulgaris* Mill.
- Ramtil** (India), *Guizotia abyssinica* Cass.
- Ranales**. The 18th order (*EP.*) of Archichlamydeae. The first order (*BH.*) of Polypetalae.
- Ranalisma** Stapf. Alismaceae. 1 Selangor.
- Randia** Houst. ex L. Rubiaceae (I. 8). 125 trop. The two l. at a node are often unequal and one frequently aborts early. Thorns often occur. In *R. dumetorum* Lam. the thorn arises in the axil above the bud, and is carried up by intercalary growth.
- Randonia** Coss. Resedaceae. 1 Algeria.
- Ranevea** L. H. Bailey (*Ravena* H. Wendl.). Palmae (IV. 1). 1 Comoros.
- Ranunculaceae** (*EP.*, *BH.*). Dicots. (Archichl. Ranales). 27 gen., 700 sp., chiefly N. temp. and well repres. in Brit. Most are herbaceous perennials with rhiz., usually of condensed (root-stock) form, and always sympodial. Each year's shoot ends in an infl. and a bud is formed in the axil of one of the l. at the base, which forms the next year's growth. In most the primary root soon dies away, and adv.

roots are formed from the stem; often (*e.g.* *Aconitum*, *Ranunculus* sp.) these swell up into tubers holding reserve materials. The l. are usu. alt., with sheathing bases and often very much divided. The chief exceptions to the above general statements, and special cases of interest, are described under the genera, *e.g.* *Helleborus*, *Eranthis*, *Clematis*, *Ranunculus*.

The infl. is typically determinate; in *Anemone* sp., *Eranthis*, &c., a single term. fl. is produced. More often a cymose branching occurs, the buds in the axils of the l. below the term. fl. developing in descending order. In *Nigella* sp. and others, after the term. fl. is formed, the buds below develop in ascending order, so that a raceme with an



Ranunculus acris. Floral diagram of axillary dichasial cyme, with details of primary fl. Sta. according to the $\frac{8}{2}1$ phyllotaxy. $a \beta$ bracteoles of primary, $a' \beta'$, a, β , of later, fls. After Eichler.

end fl. is formed; in *Aconitum*, &c. the same thing occurs, but the term. fl. rarely develops. In *Nigella*, *Anemone*, &c., there is an invol. of green leaves below the fl., usually alt. with the K.

Fl. itself typically spiral upon a $\pm$ elongated recept., but frequently the l. of the P in whorls; usu. reg. and $\frac{8}{2}$. The P usu. petaloid; rarely (*e.g.* *Ranunculus*) a true K and C. Frequently there occur nectaries of various patterns between the P proper and the sta.; these are usu. considered as modified petals, but it is as probable that they are derived directly from sta. An interesting series of transitions may be seen by comparing the following fls.: *Caltha* (honey secreted by cpls., 'calyx' present, nothing between it and sta.), *Helleborus* or *Eranthis* (honey secreted in little tubular 'petals'), *Nigella* (ditto, but 'petals' with a small leafy end), *Ranunculus auricomus* ('petals' distinct and coloured, with pocket-like nectary at base), *R. acris*, &c. (petals large, nectary at base). In *Aconitum* and *Delphinium* there is a $\div$ fl. The sta. are usu. ∞ and spiral, the anthers extr.; the cpls. ∞ , apocarpous, spiral, with either one basal or several ventral anat. ovules. In *Nigella* the cpls. are united; there is only 1 in *Actaea*, which thus forms a link to *Berberidaceae*.

As a rule the fls. are protandrous, and the sta., as their anthers open, bend outwards from the centre. A series of fls. showing various grades of adaptation to insects may be found, *e.g.* *Clematis* (pollen fl.), *Ranunculus* (actinomorphic, honey scarcely concealed at

all), *Nigella* (honey in little closed cavities), *Aquilegia* (honey in long spurs), *Delphinium* (ditto, but $\frac{1}{2}$ also, and blue), &c.

Fr. a group of achenes or follicles (caps. in *Nigella*, berry in *Actaea*); seeds with minute embryo and oily endosp. The R. are mostly poisonous; a few, e.g. *Aconitum*, are or have been medicinal.

Classification and chief genera (after Prantl):

A. Ovules many: follicle, berry or capsule.

1. *Paeoniaceae* (no honey leaves; fls. usu. sol.; ovary wall fleshy; stigma broadened): *Paeonia*.

2. *Helleboreae* (usually honey-leaves; ovary wall rarely fleshy and then fls. in racemes; fls. sol. or in cymes or racemes): *Caltha*, *Trollius*, *Helleborus*, *Nigella*, *Eranthis*, *Actaea*, *Aquilegia*, *Delphinium*, *Aconitum*.

B. Ovule one; achene.

3. *Anemoneae*: *Anemone*, *Clematis*, *Ranunculus*, *Thalictrum*.

Ranunculastrum Fourr. = *Ranunculus* Tourn. p.p. (Ranunc.).

Ranunculus (Tourn.) L. Ranunculaceae (3). 300 cosmop., esp. N. temp.; 15 in Brit. *R. Ficaria* L. (pilewort or celandine) has tuberous roots, one formed at the base of each axillary bud; these may give rise by separation to new plants. *R. aquatilis* L. (water crowfoot) is often divided into a large number of so-called species; it has a floating stem bearing l. which in many are of two kinds (*heterophylly*), the submerged l. being much divided into linear segments, whilst the floating l. are merely lobed. *R. repens* L. (creeping buttercup or crowfoot) has creeping runners which root at the nodes and give rise to new pl. *R. acris* L. and *R. bulbosus* L. are other common buttercups; the latter has the base of the stem thickened for storage. Fls. in cymes, reg., with well-marked K and C (see fam. for diagram), protandrous and visited by a miscellaneous lot of insects (class AB). Honey is secreted in little pockets at the base of the petals.

Ranzania T. Ito (*Podophyllum* p.p.). Berberidaceae. 1 Japan.

Raoulia Hook. f. Compositae (4). 20 N.Z., Austr. Woolly herbs forming dense tufted whitish masses (vegetable sheep).

Rapa Tourn. ex L. = *Brassica* Tourn. (Crucif.).

Rapaceus (Lat.), turnip-shaped.

Rapanea Aubl. (*Myrsine* p.p. BH.). Myrsinaceae (II). 140 trop., subtrop.

Rapatea Aubl. Rapateaceae. 5 Guiana, N. Brazil.

Rapateaceae (EP., BH.). Monocots. (Farinosae; Coronarieae BH.). 6 gen., 25 sp., S. Am. Herbs with 2-ranked narrow l.; infl. term. with 2 large spathes enclosing a head of spikelets, each of ∞ bracts and a term. $\frac{1}{2}$ reg. 3-merous heterochlam. fl. K (3), C (3), A 3+3, $\frac{1}{2}$ (3), 3-loc. with ∞ —! ov. in each. Loculic. caps. Endosp. Chief genus: *Rapatea*.

Rape, - oil, *Brassica Napus* L.; broom -, *Orobanche*.

Raphanistocarpus Baill. (*Momordica* p.p.). Cucurb. (3). 1 E. trop. Afr.

Raphanistrum Tourn. ex Adans. = *Raphanus* Tourn. p.p. (Crucif.).

Raphanocarpus Hook. f. Cucurbitaceae (3). 2 trop. Afr.

Raphanus (Tourn.) L. Cruciferae (2). 10 Medit., Eur., Java. *R.*

- Raphanistrum* L. in Brit.; pods jointed between seeds (lomentose).
R. sativus L. (radish) with root-storage.
- Raphe**, the ridge where the stalk is attached to side of ovule.
- Raphia** Beauv. Palmae (III). 8 trop. Afr., *R. vinifera* Beauv. (wine palm) also on the Amazon (see fam.). Spadix monoec.; the bracts have a curious sheathing form. Berry enclosed in large sheathing scales. In *R. Ruffia* Mart. roots develop between the dead leaf-bases; they curve upwards and are said to act as respiratory organs.
- Raphiacme** Harv. (*Raphionacme*). Asclepiadaceae (I). 15 S. Afr.
- Raphides**, needle-shaped crystals of Ca oxalate; *Arum*.
- Raphidiocystis** Hook. f. Cucurbitaceae (3). 3 trop. Afr., Madag.
- Raphidophora** Hassk. = *Rhaphidophora* Schott. (Arac.).
- Raphiolepis** Lindl. Rosaceae (II). 4 China, Japan.
- Raphionacme** Harv. (*Raphiacme*). Asclepiadaceae (I). 15 S. Afr.
- Raphistemma** Wall. Asclepiadaceae (II. 1). 2 Indomal.
- Raphithamnus** Miers. Verbenaceae (I). 1 Chili.
- Rapinia** Montr. Verbenaceae (4). New Caled.
- Rapistrum** Tourn. ex Medic. Cruciferae (2). 10 Medit., mid-Eur.
- Rapona** Baill. (*Breweria* p.p.). Convolvulaceae (I). 1 Madag.
- Raptostylus** Post et O. Ktze. = *Rhaptostylum* Humb. et Bonpl.
- Rapunculus** Tourn. ex Mill. = *Phyteuma* L. (Campan.).
- Rapuntium** Tourn. ex Mill. = *Lobelia* L. (Campan.).
- Raputia** Aubl. Rutaceae (I). 5 trop. Am., W.I.
- Rasamala**, *Altingia excelsa* Nor.
- Raspalia** Brongn. (*Nebelia* Neck.). Bruniaceae. 6 S. Afr.
- Raspberry**, *Rubus Idaeus* L.; **blackcap** -, *Rubus occidentalis* L.
- Rathbunia** Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 3 Mex.
- Rati** (India), *Abrus precatorius* L.
- Ratibida** Rafin. (*Lepachys* B.H., *Rudbeckia* E.P.). Compositae (5).
 2 N. Am.
- Ratonia** DC. (*Matayba* E.P.). Sapindaceae (I). 36 warm Am.
- Rattan canes**, the stripped stems of climbing palms, esp. *Calamus*, *Daemonorops*, *Korthalsia*, *Plectocomia* (Ridley in *Str. Bull.* 1903).
- Rattle box** (Am.), - **wort** (W.I.). *Crotalaria*; **yellow** -, *Rhinanthus*.
- Rattlesnake grass** (Am.), *Glyceria canadensis* Trin.; - **plantain** (Am.), *Goodyera*; - **weed** (Am.), *Hieracium venosum* L.
- Ratzeburgia** Kunth. Gramineae (2). 1 Burma.
- Rauia** Nees et Mart. Rutaceae (I). 1 S.E. Brazil.
- Rautanenia** Buchenau. Alismaceae. 1 S.W. Afr.
- Rauwenhoffia** Scheff. Anonaceae (I). 2 Malaya.
- Rauwolfia** Plum. ex L. (incl. *Ophioxylon* L.). Apocynaceae (I. 3). 50 trop. L. often in whorls of 3 or 4.
- Ravenala** Adans. Musaceae. 2 Madag. and S. Am. They have a true sub-aerial stem, which bears large 2-ranked l. giving the pl. a peculiar fan-like appearance. *R. guyanensis* Steud. is the only Am. sp. of the suborder *Musaeae*. *R. madagascariensis* J. F. Gmel. is the traveller's tree, so-called because the water that accumulates in the leaf-bases has been used for drinking in cases of necessity. It may be found by piercing the base with a knife.
- Ravenea** H. Wendl. Palmae (IV. 1). 1 Comoros.
- Ravenia** Vell. Rutaceae (I). 5 Brazil, W.I.

Ravensara Sonnerat. Lauraceae (II). 4 Madag. *R. aromatica* J. F.

Gmel. is the Madagascar clove (fr. a spice).

Ravnia Oerst. Rubiaceae (I. 5). 1 Costa Rica.

Rawsonia Harv. et Sond. Flacourtiaceae (I). 5 S. and trop. Afr.

Ray flowers, *Compositae*, *Umbelliferae*.

Razisea Oerst. Acanthaceae (IV. B). 1 Costa Rica.

Razor grass (W.I.), *Scleria pterota* Presl.

Re- (Lat. pref.), back or down; **-ceptacle**, see separate article; **-clinate**, bent downwards; **-current** (venation), veins returning towards midrib; **-curved**, bent back or down; **-duction**, see separate article; **-duplicate** (aestivation) see Aestivation (vernation), *Palmae*; **-flexed**, bent abruptly downwards or backwards; **-fracted**, bent sharply backward from the base; **-gression**, reversion; **-juvenescence**, renewal of growth from old or injured parts; **-production**, see separate article; **-supination**, *Lobelia*, *Lophanthus*, *Orchidaceae*; **-ticutate**, netted; **-tifform**, apparently netted; **-trorse**, directed back or downwards; **-tuse**, broadly notched (*Gd* in fig., Leaf); **-versed**, upside down, *Alstroemeria*, *Bomarea*, *Brachypodium*; **-version to type**, *Acacia*, *Bossiaea*, *Cactaceae*, *Russellia*; **-volute**, margins rolled outward.

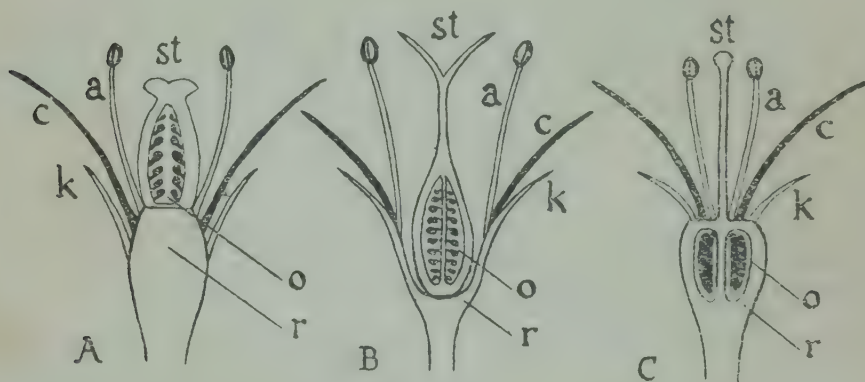
Reaumuria L. Tamaricaceae. 15 E. Medit., C. As. Halophytes.

Reboudia Coss. et Dur. (*Erucaria* BH.). Cruciferae (2). 2 N. Afr., W. As.

Rebsamenia Conzatti. Malvaceae (2). 1 Mexico.

Rebutia K. Schum. (*Echinocactus* p.p. EP.). Cactaceae (III. 1). 1 Argent.

Receptacle, the portion of stem upon which the fl. (or infl.) is actually borne. According to its form the ovary may be superior or inferior, the fl. hypo-, peri-, or epi-gynous (*q.v.* and see fig.).



DIAGRAMMATIC LONGITUDINAL SECTIONS OF FLOWERS, to show types of receptacle, ovary, stigma &c. A, hypog. fl. with uniloc. ovary, parietal plac., and numerous ascending anatr. ovules with raphe downwards; stigma sessile, bilobed. B, perig. fl. with multi-loc. ovary, axile plac., and numerous horiz. anatr. ovules with raphe upwards; style with bifid stigma. C, epig. fl. with multi-loc. ovary, apical plac., and sol. pend. anatr. ovules with ventral raphe; style long with capitate stigma. *r*, recept.; *k*, calyx; *c*, corolla; *a*, stamens; *o*, ovary; *st*, stigma.

Fl., or P, K, C, A, may be *hypo-*, *peri-* or *epi-gynous*; the G *superior* or *inferior*. Perig. fls. may be shallowly or deeply perig.; in the latter case the *tube* is described as to length, texture, &c. There may be a *disc* in the fl. Sometimes outgrowths (*effigurations*) of the recept. are seen, e.g. in Passiflora, Capparidaceae, Orchidaceae. &c. Sometimes the recept. elongates between the whorls of floral members, e.g. in *Lychnis* between K and C, in Passiflora and in many Capparidaceae between C and A, in *Capparis* between A and G. If the elongated portion bears the sta. it is termed an *andro-phore*, if only the cpls., a *gynophore*. Other receptacular outgrowths are seen in epig. flowers, e.g. the wings on the inf. ovary of *Begonia*, the thorns (which sometimes bear fls.) on that of *Tetragonia*, the nectariferous disc of *Umbelliferae*, &c., and so on.

Rectipetality, tendency to grow in a straight line.

Red bay (Am.), *Persea carolinensis* Nees; - **bud** (Am.), *Cercis*; - **campion**, *Lychnis dioica* L.; - **cedar**, *Juniperus virginiana* L., (Austr.) *Cedrela*; - **head** (W.I.), *Asclepias curassavica* L.; - **hot poker**, *Kniphofia*; - **ink plant**, *Phytolacca decandra* L.; - **pepper**, *Capsicum annuum* L.; - **Peru bark**, *Cinchona succirubra* Pav.; - **root** (Am.), *Ceanothus*, *Lachnanthes*; - **sandalwood**, - **sanders**, *Pterocarpus santalinus* L. f.; - **sorrel**, *Hibiscus Sabdariffa* L.; - **spur-valerian**, *Centranthus*; - **top grass** (Am.), *Agrostis vulgaris* With.; - **water tree**, *Erythrophloeum*; - **wood**, *Sequoia sempervirens* Endl.; --, **Indian**, *Chickrassia tabularis* A. Juss.; - **weed** (W.I.), *Phytolacca*.

Redfieldia Vasey. Gramineae (10). 1 Colorado.

Redowskia Cham. et Schlecht. Cruciferae (4). 1 Kamtschatka.

Reduction, of complex infl., *Echinops*, *Euphorbia*, *Chorizanthe*, *Mirabilis*, *Xanthosia*; - **of l. surface**, cf. Xerophytes; - **of sporophylls** is common in fls. which very often have fewer in inner than outer whorls (*oligomery* in former, *pleiomery* in latter).

Reed, *Arundo*, *Phragmites*; - **bent grass** (Am.), *Calamagrostis*; - **grass**, *Phalaris*, (W.I.) *Arundo*; - **mace** *Typha*; **paper-**, *Cyperus Papyrus* L.

Reedia F. Muell. Cyperaceae (11). 1 S.W. Austr.

Reesia Ewart. Amarantaceae (3). 1 N. Austr.

Reevesia Lindl. Sterculiaceae. 3 Himalaya to China.

Regelia Schau. Myrtaceae (II. 1). 3 W. Austr.

Regions, floral, see Floral Regions.

Rein-orchis (Am.), *Habenaria*.

Regma, fr. of Geraniaceae, a schizocarp breaking into cocci.

Regnellia Barb. Rodr. (*Bletia* p.p. EP.). Orchid. (II. 9). 1 Brazil.

Regnellidium Lindman. Marsiliaceae. 1 S. Brazil.

Regular (fl.), actinomorphic (q.v.) in symmetry.

Rehmaunia Libosch. ex Fisch. et Mey. Scrophul. (III. 1). 4 Chi., Jap.

Reichardia Roth. (*Picridium* BH.). Compositae (13). 8 Medit.

Reicheella Pax. Caryophyllaceae (I. 3). 1 Chili.

Reichenbachanthus Barb. Rodr. Orchidaceae (II. 6). 1 Brazil.

Reichenbachia Spreng. Nyctaginaceae. 1 S. Brazil, Paraguay.

Reifferscheidia Presl (*Dillenia* p.p. EP.). Dillen. 1 S. Am.

Reimaria Fluegge. Gramineae (5). 4 warm Am.

Reimarochloa Hitchcock (*Reimaria* p.p.). Gramineae (5). 2 warm Am.

- Reineckia** Kunth. Liliaceae (VII). 1 China, Japan. Cult. orn. fl.
- Reinhardtia** Liebm. Palmae (IV. 1). 8 C. Am., Mexico.
- Reinwardtia** Dum. Linaceae. 2 N. India, China.
- Reinwardtiodendron** Koorders. Meliaceae (III). 1 Celebes.
- Reissekia** Endl. Rhamnaceae. 1 Brazil.
- Relbunium** Benth. et Hook. f. Rubiaceae (II. 11). 28 Mex. to Argent.
- Relhania** L'Hérit. Compositae (4). 18 S. Afr.
- Remijia** DC. Rubiaceae (I. 5). 15 S. Am. Bark a source of quinine.
- Remirea** Aubl. Cyperaceae (II). 1 trop.
- Remusatia** Schott. Araceae (VI). 2 Indomal. *R. vivipara* Schott has a tuberous stem which gives off upright shoots bearing scale-l.: in their axils are little tubers, each provided with a term. hook by which it may be carried away by an animal.
- Remya** Hillebr. Compositae (3). 2 Hawaiian Is.
- Renanthera** Lour. Orchidaceae (II. 20). 15 Malaya, Cochin China. Climbers. Cult. orn. fl.
- Renantherella** Ridl. (*Renanthera* p.p.). Orchid. (II. 20). 1 Malaya.
- Renarda** Regel. Umbelliferae (III. 4). 1 Turkestan.
- Renealmia** L. = *Tillandsia* L. (Bromel.).
- Renealmia** L. f. Zingiberaceae (I). 15 trop. Am., W. Afr.
- Renewal shoots**, *Sagittaria*.
- Renggeria** Meissn. Guttiferae (v). 2 trop. Brazil.
- Rengifa** Poepp. et Endl. (*Quapoya* EP.). Guttiferae (v). 3 trop. S. Am.
- Reniform**, kidney-shaped.
- Rennellia** Korth. (*Morinda* p.p. EP.). Rubiaceae (II. 9). 4 Malaya.
- Repand**, slightly sinuate.
- Repens, reptans** (Lat.), prostrate and rooting.
- Replum**, *Cruciferae*.
- Reproduction** is divided into *vegetative* (detachment of portions of the veg. organs, see Veg. Repr.) and *true*, by special cells, which may be asexual (*spores*), or sexual (*gametes*). The former germinate and give rise to *prothalli*; the latter unite in pairs, and give the asexual plant.
- Reptonia** A. DC. Sapotaceae (I) (Myrsin BH.). 2 C. As.
- Rescue grass** (Am.), *Bromus unioloides* H. B. et K.
- Reseda** Tourn. ex L. Resedaceae. 55 Medit., Eur.; 2 Brit. *R. odorata* L. (mignonette). Large post. disc; ovary and fr. open at apex. *R. lutea* L. (dyer's weld) yields a yellow dye.
- Resedaceae** (EP., BH.). Dicots. (Archichl. Rhoeadales; Parietales BH.). 6 gen., 60 sp., chiefly Medit., also in Eur., As., S. Afr., Calif. Most are xero. herbs with alt. stip. l. and racemes of $\cdot\frac{1}{2}$ $\frac{3}{4}$ fls., with bracts but without bracteoles. The axis develops post. into a large disc, and upon this side the petals, &c. are usu. better developed than upon the ant. side of the fl. K 4—8; C 0—8; A 3—40; $\overline{G}$ (2—6) or 2—6, in the former case 1-loc. with parietal plac. Ovary open at the top; ovules 1— ∞ per cpl., anatr. Fr. capsular; embryo curved; no endosp. *Chief genera*: *Reseda*, *Oligomeris*.
- Reserves**, cf. Edible Products, Vegetative Reproduction, &c.

Resins, products of secretion or disintegration, usu. formed in special cavities or passages; collected by tapping. Insoluble in water, soluble in alcohol, ether, or carbon disulphide; burn with a sooty flame. Roughly divisible into hard *resins* proper, *gum-resins* or mixtures of gum and resin, and *balsams*, fluid resins or resins dissolved in ethereal oils. **Resins** are derived from the distillation of the turpentine of Coniferae, &c., the hard *copals* or *animes* from Agathis, Hymenaea, Trachylobium, &c., the *dammars* from Canarium and other Burseraceae, Shorea and other Dipterocarpaceae, Dracaena, Guaiacum, Protium, Rhus, Xanthorrhoea, &c. **Gum-resins** from Boswellia (frankincense), Calophyllum, Convolvulus, Dorema, Ferula, Garcinia (gamboge), &c. **Balsams** from Burseraceae (esp. Canarium), Commiphora, Coniferae (turpentine), Copaifera (balsam of Copaiba), Dipterocarpus, Liquidambar, Melanorrhoea, Myroxylon (balsam of Peru, Tolu), Opoponax, Pistacia (Chian turpentine, mastic), Populus, Styrax, Vateria, Vatica; -**passages**, channels in which resin flows.

Respiration, absorption of O and evolution of CO₂; cf. Aerenchyma.

Rest harrow, *Ononis*.

Restans (Lat.), persistent.

Restiaceae (BH.) = Restionaceae.

Restiaria Lour. Inc. sed. 1 China.

Restio L. Restionaceae. 110 S. Afr., Austr. Assimilation is performed by the green stems, the l. being reduced to sheaths.

Restionaceae (EP., BH.). Monocots. (Farinosae; Glumaceae BH.). 19 gen., 250 sp., mostly in S. Afr. and Austr., a few in N.Z., Chili and Cochin China. Xero., usu. of tufted growth, with the general habit of Juncus; below ground is a rhiz. with scaly l., giving off erect cylindrical shoots bearing sheathing l. (rarely with ligules), which have a short blade, or sometimes none, in which case assim. is performed by the stem. Fls. dioec. (rarely monoec. or ♀), reg., in spikelets. P in two whorls, but single members often absent; A 3 or 2, opp. to the inner perianth-l.; G (3—1), 1—3-loc., with 1 pend. orthotr. ov. in each. Caps. or nut. Embryo lens-shaped, in mealy endosp. *Chief genus*: Restio.

Restrepia H. B. et K. Orchidaceae (II. 8). 15 trop. Am.

Retama Rafn. = Genista Tourn. p.p. (Legum.).

Retanilla Brongn. Rhamnaceae. 6 Chili, Peru.

Retinaculum, *Acanthaceae*, *Asclepiadaceae*, *Zostera*.

Retiniphyllum Humb. et Bonpl. Rubiaceae (I. 8). 10 trop. S. Am.

Retinispora Sieb. et Zucc. = Thuya L., &c. Seedlings of many sp. of the genera Chamaecyparis, Cupressus, Thuya, &c., exhibit, instead of the decussate appressed l. of the mature plant, spreading needle-l. (often in whorls of 4) like those of Abies, &c. (cf. Pinus, Acacia, &c.). If now these young seedlings be used as offsets, the new pl. thus formed retain throughout life this form of foliage; and pl. are thus obtained of totally different habit from that usual in these genera. To these 'seedling forms' the name R. was given. Many in gardens. The synonymy of some is: *R. decussata* hort. = Thuya orientalis; *R. filifera* Fowles = Cupressus obtusa; *R. juniperoides* Carr. = Thuya orientalis; *R. obtusa* Sieb. et Zucc. = Cupressus obtusa; *R. pisifera*

- Sieb. et Zucc. = *Cupressus pisifera*; *R. recurvata* hort. and *R. rigida* Carr. = *Thuya orientalis*; *R. squarrosa* Sieb. et Zucc. and *R. stricta* hort. = *Cupressus pisifera*. For further synonymy see *Index Kewensis*.
- Retinodendropsis** Heim. Dipterocarpaceae. 1 Borneo.
- Retting**, rotting away the softer tissues, cf. *Linum*, *Cocos*.
- Retzia** Thunb. Loganiaceae (Solan. *BH.*). 1 S. Afr.
- Reussia** Endl. Pontederiaceae. 2 S. Am.
- Reutera** Boiss. = *Pimpinella* Riv. p.p. (Umbell.).
- Reverchonia** A. Gray. Euphorbiaceae (A. 1. 1). 1 Texas.
- Reya** O. Ktze. (*Burchardia* R. Br.). Liliaceae (1). 1 Austr., Tasm.
- Reyesia** Clos (*Salpiglossis* p.p. *EP.*). Solanaceae (5). 1 Chili.
- Reynaudia** Kunth. Gramineae (6). 1 Cuba, S. Domingo.
- Reynoldsia** A. Gray (*Trevesia* *BH.*). Araliaceae (1). 4 Polynesia.
- Reynosia** Griseb. Rhamnaceae. 5 W.I., Florida.
- Reynoutria** Houtt. Inc. sed. 1 Japan.
- Rhabdadenia** Muell.-Arg. Apocynaceae (11. 1). 7 trop. Am., W.I.
- Rhabdia** Mart. Boraginaceae (11). 1 trop.
- Rhabdodendron** Gilg et Pilger. Rubiaceae (inc. sed.). 7 Amazon.
- Rhabdophyllum** Van Tiegh. (*Ouratea* Aubl.). Ochnac. 25 trop. Afr.
- Rhabdosciadium** Boiss. Umbelliferae (111. 2). 3 Persia.
- Rhabdostigma** Hook. f. Rubiaceae (11. 1). 1 E. Afr.
- Rhabdothamnopsis** Hemsl. Gesneriaceae (1). 1 China.
- Rhabdothamnus** A. Cunn. Gesneriaceae (1). 1 New Zealand.
- Rhabdotheca** Cass. = *Launaea* Cass. p.p. (Comp.).
- Rhachicallis** DC. Rubiaceae (1. 3). 1 W.I.
- Rhachidospermum** Vasey (*Jouvea* p.p. *EP.*). Gramineae (12). 1 Calif.
- Rhachis**, rachis; **rhaphe**, raphe.
- Rhacodiscus** Lindau. Acanthaceae (IV. B). 3 S. Am.
- Rhacoma** Adans. (*Leuzea* *BH.*, *Centaurea* p.p.). Comp. (11). 8 W.I., S. Am.
- Rhacoma** L. (*Myginda* *BH.*). Celastraceae. 15 W.I., trop. Am.
- Rhadamanthus** Salisb. Liliaceae (v). 2 S. Afr.
- Rhagadiolus** Tourn. ex Scop. (*BH.* incl. *Hedypnois* and *Garhadiolus*). Compositae (13). 1 Medit. Fr. linear, without pappus, completely enveloped in an involucre bract.
- Rhagodia** R. Br. Chenopodiaceae (A). 12 Austr.
- Rhamnaceae** (*EP.*, *BH.*). Dicots. (Archichl. Rhamnales; Celastrales *BH.*). 40 gen., 500 sp., cosmop. Mostly trees or shrubs, often climbing (by aid of hooks in *Ventilago*, tendrils in *Gouania*, &c., twining stems in *Berchemia*): thorns occur in some, and especially in *Colletia*, &c. (*q.v.*). In these pl. too, serial buds occur in the l.-axils. L. simple, usu. with stip., never lobed or divided. Infl. cymose, usu. a corymb.
- Fl. inconspic., ♀ or rarely unisexual, reg., sometimes apet. Recept. hollow, free from or united to the ovary. K 5—4, valvate; C 5—4, usu. small, often strongly concave, frequently clawed at base; A 5—4, alt. with sepals, usu. enclosed by the petals, at any rate at first. Disc usu. well developed, intra-staminal; G free or ± united to recept., 3—2 (rarely by abortion 1-) loc. (sometimes 4- or typically 1-loc); in each loc. 1 (rarely 2) basal ovule with downwardly-directed micropyle; style simple or divided. Fr. dry, splitting into dehis. or indeh.

mericarps, or a drupe with 1 or several stones, or a nut. Endosp. little or none. Many of the dry fr. show special adaptations for wind-carriage, *e.g.* *Paliurus*, *Ventilago*. Closely related to *Vitaceae*, from which it is chiefly distinguished by the small petals, the recept., the endocarp and simple l.; it also approaches *Celastraceae*, the chief distinction being the antepetalous sta. Few are of economic value; see *Zizyphus*, *Rhamnus*, *Hovenia*. *Chief genera*: *Ventilago*, *Paliurus*, *Zizyphus*, *Rhamnus*, *Hovenia*, *Ceanothus*, *Phylica*, *Colletia*, *Gouania*.

Rhamnales. The 25th order of *Archichlamydeae*.

Rhamneae (B.H.) = *Rhamnaceae*.

Rhamnella Miq. (*Microhamnus* B.H.). *Rhamnaceae*. 1 Japan, China.

Rhamnidium Reissek. *Rhamnaceae*. 5 trop. S. Am., W.I.

Rhamnoneuron Gilg. *Thymelaeaceae*. 1 Tonquin.

Rhamnus Tourn. ex L. *Rhamnaceae*. 75 cosmop., 2 in Brit., R. *cathartica* L. (common or purging buckthorn) and *R. Frangula* L. (alder buckthorn). Shrubs with alt. or opp. l. and small cymose clusters of fls. Two sections. To § 1, *Eurhamnus* (fls. usu. 4-merous, polyg. or dioec.), belong *R. Alaternus* L. (Medit.) and *R. cathartica* (Eur., As., Medit.), whose berries are purgative; the juice of the fr. is mixed with alum and evaporated, thus forming the paint known as sap-green; also *R. infectoria* L. (Mts. of S. Eur.) whose berries (graines d'Avignon or 'yellow berries') yield useful green and yellow dye-stuffs, and *R. chlorophora* Decne. from whose bark the Chinese prepare the dye known as 'Chinese green indigo' used in dyeing silk (*R. utilis* Decne. is also employed). To § 2, *Frangula* (fls. usu. 5-merous, ♂), belong *R. Frangula* (Eur., As., N. Afr.) whose bark is officinal (cathartic) and whose wood forms one of the best charcoals, *R. Purshiana* DC. in N. Am., whose bark (*Cascara sagrada*) is largely used as a cathartic, &c.

Rhamphicarpa Benth. *Scrophulariaceae* (III. 2). 8 palaeotrop.

Rhamphidia Lindl. = *Hetaeria* Blume (Orchid.).

Rhamphogyne Sp. Moore (*Abrotanella* p.p.). *Compos.* (3). 1 Rodrigues.

Rhanterium Desf. *Compositae* (4). 3 N.W. Afr. to Beluchistan.

Rhaphanistrocarpus Pax. *Cucurbitaceae* (3). 1 Mombasa.

Rhaphanocarpus Hook. f. *Cucurbitaceae* (3). 2 trop. E. Afr.

Rhaphanus L. (*Raphanus*). *Cruciferae* (2). 10 Medit., Eur., Java.

Rhaphidanthe Hiern. *Ebenaceae*. 1 trop. W. Afr.

Rhaphidiocystis Hook. f. *Cucurbitaceae* (3). 3 trop. Afr., Madag.

Rhaphidophora Hassk. *Araceae* (II). 60 Indomal. Sympodial climbing stems with clasping roots and pend. aerial roots. The pination of the l. arises like that in *Monstera*, *i.e.* by long holes arising between the ribs, and the margin finally breaking. Fls. ♂.

Rhaphidorhynchus Finet (*Angraecum* p.p.). *Orchidaceae* (II. 20). 22 trop. Afr., Madag., Masc.

Rhaphidospora Nees (*Justicia* p.p. B.H.). *Acanth.* (IV. B). 6 palaeotrop.

Rhaphiolepis Lindl. *Rosaceae* (II). 4 subtrop. E. As.

Rhaphiophallus Schott (*Amorphophallus* p.p.). *Araceae* (IV). 1 S. Ind.

Rhaphiostylis Planch. (*Apodytes* B.H.). *Icacinaceae*. 7 trop. W. Afr.

Rhaphis Lour. = *Chrysopogon* Trin. = *Andropogon* L. p.p.

Rhaphispermum Benth. *Scrophulariaceae* (III. 2). 1 Madag.

- Rhaphitamnus** Miers. Verbenaceae (1). 1 Chili.
Rhapidophyllum H. Wendl. et Drude. Palmae (1. 2). 1 S.E. U.S.
Rhapis L. f. Palmae (1. 2). 5 E. As. Cult. orn.
Rhaponticum (Vaill.) Hall. = *Centaurea* L. p.p. (Comp.).
Rhaponema Miers. Menispermaceae. 1 Madag.
Rhaptopetalum Oliv. Scytotpetalaceae (Olatin. *BH.*). 5 trop. Afr.
Rhatany root, *Krameria*.
Rhazya Decne. Apocynaceae (1. 3). 2 W. As.
Rhea, *Boehmeria nivea* Gaudich.
Rheedia L. Guttiferae (v). 17 trop. Am., Madag.
Rhektophyllum N.E. Br. Araceae (IV). 1 trop. W. Afr.
Rheotropism, sensitiveness to water stimulus.
Rhetinodendron Meissn. Compositae (8). 1 Juan Fernandez.
Rhetinosperma Radlk. Sapindaceae (1). 1 Queensland.
Rheum L. Polygonaceae (1. 2). 20 temp. and subtrop. As. Fls. like Rumex, but coloured and entomophilous, though they exhibit traces of anemophily in very large stigmas (*cf.* *Poterium*, &c.). *R. officinale* Baill. furnishes medicinal rhubarb; *R. Rhaponticum* L. is the rhubarb used as a vegetable.
Rhexia L. Melastomaceae (1). 7 E. U.S.
Rhigiocarya Miers. Menispermaceae. 1 trop. W. Afr.
Rhigiophyllum Hochst. Campanulaceae (1. 1). 1 S. Afr.
Rhigospira Miers (*Tabernaemontana* L.). Apocynaceae (1. 3). 7 Brazil.
Rhigozum Burch. Bignoniaceae (2). 5 S. Afr.
Rhinacanthus Nees. Acanthaceae (IV. B). 6 palaeotrop.
Rhinanthus L. (incl. *Fistularia* L.). Scrophulariaceae (III. 3). 9 Eur., Medit., N. Am.; 2 in Brit. (yellow-rattle), common in damp pastures. Semi-parasites with loose pollen fls. (see fam.).
Rhinopteryx Niedenzu. Malpighiaceae (1). 1 Gambia.
Rhipidium, a monoch. cyme where each successive branch falls alt. on one side and the other of the relatively main axis, and all fls. are in one plane, *Iris*, *Juncus*.
Rhipogonum Forst. Liliaceae (XI). 5 E. Austr., N.Z.
Rhipsalis Gaertn. (incl. *Hariota*, *Pfeiffera*). Cactaceae (III. 3). 50 Brazil, Argentina. *R. Cassytha* L. is found in Ceylon and Madag., but quite possibly introduced (the only cactus out of Am.; see fam.). Epiph., rarely thorny, sometimes of *Cereus*-like structure, sometimes Phyllocactus-like, or with cylindrical stems (compare sp. of *Euphorbia*). Fr. fleshy.
Rhiz- **rhizo-** (Gr. pref.), root; **-carp**, pl. with sporangia on root-like processes, *Marsileaceae*; **-me**, see separate article; **-ophore**, *Selaginella*.
Rhizanthemum Van Tiegh. (*Loranthus* p.p.). Loranth. (1). 2 Malaya.
Rhizanthous, flowering from the root.
Rhizoboleae = Caryocaraceae.
Rhizocephalum Wedd. Campanulaceae (III). 4 Andes.
Rhizoma galangae, *Alpinia officinarum* Hance.
Rhizome, an underground creeping stem, usu. thickened, and mono- or sympodial, *Acorus*, *Alismaceae*, *Anemone*, *Asparagus*, *Balanophoraceae*, *Bambusa*, *Begonia*, *Bellis*, *Cyperaceae*, *Dioscorea*, *Equisetum*, *Eranthis*, *Gramineae*, *Iridaceae*, *Juncaceae*, *Lamium*, *Liliaceae*, *Musa*, *Ophioglossaceae*, *Petasites*, *Pteris*, *Ranunculaceae*, *Typha*, *Zingiber*.

Rhizophora L. Rhizophoraceae. 3, *R. Mangle* L. in Am., *R. mucronata* Lam. and another, Japan to E. Afr. These mangroves (*q.v.*) are moderate-sized trees with a great development of roots from the stem and branches. On the sub-aerial parts of the roots are large lenticels, probably serving in the same way as the aerenchyma of *Bruguiera*, &c. The seed germinates upon the tree, the hypocotyl projects at the micropyle and grows rapidly. The bark is used for tanning, yielding a substance known as cutch (*cf.* *Acacia*).

Rhizophoraceae (*EP.*, *BH.*). Dicots. (Archichl. Myrtiflorae; Myrtales *BH.*). 12 gen., 60 sp., trop., mostly Old World. See Mangroves. Trees usu. with opp. stip. l.; fls. sol. or in cymes, &c., ♀, hypo- to epi-gynous, reg. K usu. 4—8; C 4—8; A 8—∞, inserted on outer edge of perig. or epig. disc; G (2—5), 2—5-loc. with usu. 2 anatropous ov. in each loc. Fr. a slightly soft berry. *Chief genera*: *Rhizophora*, *Bruguiera*, *Weihea*.

Rhodamnia Jack. Myrtaceae (1). 12 Malay Penins. to N.S. Wales.

Rhodanthe Lindl. = *Helipterum* DC. p.p. (Comp.).

Rhodax Spach = *Helianthemum* Tourn. (Cist.).

Rhodea Endl. = *Rohdea* Roth. (Lili.).

Rhodes grass, *Chloris*.

Rhodiola L. = *Sedum* Tourn. p.p. (Crass.).

Rhodo- (Gr. pref.), rose red.

Rhodocalyx Muell.-Arg. Apocynaceae (II. 1). 1 campos of Minas Geraes. K coloured.

Rhodochiton Zucc. Scrophulariaceae (II. 3). 1 Mexico, *R. volubile* Zucc., a twiner with sensitive petioles (*cf.* *Clematis*). Cult. orn.

Rhodochlaena Thou. Chlaenaceae. 3 Madag.

Rhodoclada Baker = *Asteropeia* Thou. (Theaceae). 1 Madag.

Rhodocodon Baker. Liliaceae (V). 1 Madag.

Rhodocolea Baill. Bignoniaceae (4). 1 Madag.

Rhododendron L. (incl. *Azalea* L.). Ericaceae (1. 2). 250 N. temp., &c. "One sp. (*R. Lochae* F. Muell.) is found in trop. Austr., the greatest richness of sp. is in E. As., from S. China to the Himal. and Japan; a second and lesser abundance is found in temp. N. Am., and a few sp. in the arctic regions. 4 sp. in Mid. and S. Eur., 5 in Caucasus." (Drude.) Many sp. and hybrids cult. Shrubs and small trees with leathery l.; the l. of § *Azalea* last one year, those of the other subgenera usu. more. Large winter buds are formed covered with scale l.; the larger and stouter ones contain infls., the slender ones merely l. The branch bearing an infl. is continued by the formation of a bud in one of the upper axils. Some of the Indian sp. are epiph. The C is slightly ♀, and the sta. and styles bend upwards to touch the under surface of a visiting insect. *R. ferrugineum* L. (alpine rose) is protandr. and visited by humble-bees.

Rhodogeron Griseb. Compositae (4). 1 Cuba.

Rhodohypoxis Nel. Amaryllidaceae (III). 2 S.E. Afr.

Rhodolaena Thou. Chlaenaceae. 3 Madag.

Rhodoleia Champ. ex Hook. Hamamelidaceae. 2 Hongkong to Java.

Rhodomyrtus Reichb. Myrt. (1). 6 trop. and E. As., Austr. Ed. fr.

Rhodopis Urb. (*Rudolphia* p.p.). Leguminosae (III. 10). 1 W.I.

Rhodora L. = *Rhododendron* L. p.p. (Eric.).

- Rhodosciadium** S. Wats. Umbelliferae (III. 6). 5 Mexico.
- Rhodosepala** Baker. Melastomaceae (I). 3 Madag.
- Rhodospatha** Poepp. et Endl. Araceae (II). 11 S. Am.
- Rhodosphaera** Engl. Anacardiaceae (3). 1 E. Austr.
- Rhodostachys** Phil. Bromeliaceae (4). 7 S. Am. Cult. orn. infl.
- Rhodothamnus** Reichb. Ericaceae (I. 3). 1 E. Alps, E. Siberia.
- Rhodotypos** Sieb. et Zucc. Rosaceae (III. 1). 1 Japan, *R. kerrioides* S. et Z., a cult. orn. flg. shrub. It has opp. l., found in no other plant of the fam., except in seedlings of *Prunus*. There is an epicalyx (see *Potentilla*).
- Rhoeadales**. The 19th order of Archichlamydeae.
- Rhoeadiniæ** (Warming). The 9th order of Choripetalae.
- Rhoeidium** Greene (*Rhus* p.p.). Anacardiaceae (3). 7 Mexico, Texas.
- Rhoeo** Hance. Commelinaceae. 1 C. Am., Mexico. Cult. orn. fl. and l.
- Rhoicissus** Planch. (*Vitis* p.p.). Vitaceae. 12 trop. and S. Afr.
- Rhoium** (Cl.), a creek formation.
- Rhombochlamys** Lindau. Acanthaceae (IV. B). 2 Colombia.
- Rhomboidal**, of rhomboid shape.
- Rhombonema** Schlechter. Asclepiadaceae (II. 1). 1 S. Afr.
- Rhopalandria** Stapf. Menispermaceae. 1 W. trop. Afr.
- Rhopaloblaste** Scheff. Palmae (IV. 1). 2 Moluccas, New Guinea.
- Rhopalobrachium** Schlechter et Krause. Rubiaceae (II. 1). 2 New Cal.
- Rhopalocarpus** Boj. Flacourtiaceae (inc. sed.). 3 Madag.
- Rhopalocnemis** Jungh. Balanophoraceae. 1 E. Indomal.
- Rhopalopilula** Pierre. Opiliaceae. 3 W. trop. Afr.
- Rhopalostylis** H. Wendl. et Drude (*Kentia* p.p. *EP.*). Palmae (IV. 1). 2 Norfolk I., New Zealand.
- Rhubarb**, *Rheum officinale* Baill.; - (vegetable) *R. Rhaponticum* L.
- Rhus** (Tourn.) L. (incl. *Cotinus* Tourn. and *Toxicodendron* Tourn.). Anacardiaceae (3). 130 sub trop. and warm temp. *R. Coriaria* L. is the sumac (S. Eur.); its l., ground fine, are used for tanning and dyeing. *R. Toxicodendron* L. (N. Am., poison-ivy) climbs like ivy. Its juice produces ulcerations or erysipelas. *R. Cotinus* L. (Medit. to China) is the wig-tree, often cult. in shrubberies. Fls. polyg. The stalk of each drupe remains smooth, but the sterile parts of the panicle lengthen and become hairy. Then when ripe the stalks become detached at their joints, and the whole infl., with the fr. on it, falls to the ground and may be blown about. The wood yields the yellow dye 'young fustic.' *R. vernicifera* DC. is the lacquer-tree. Japan lacquer is obtained from notches in the stem. *R. succedanea* L. is the wax-tree of Japan; its crushed berries yield wax.
- Rhynchanthera** DC. Melastomaceae (I). 35 trop. Am.
- Rhynchanthus** Hook. f. Zingiberaceae (I). 1 Burma.
- Rhynchelytrum** Hochst. (*Tricholaena* *EP.*). Gramineae (5). 1 trop. Afr.
- Rhynchocalyx** Oliv. Lythraceae. 1 Natal.
- Rhynchocarpa** Schrad. = *Kedrostis* Medic. (Cucurb.).
- Rhynchocorys** Griseb. Scrophulariaceae (III. 3). 2 S. Eur. to Persia.
- Rhynchodia** Benth. Apocynaceae (II. 1). 2 E. Indomal.
- Rhynchodium** C. Presl = *Psoralea* L. (Legum.).

- Rhynchoglossum** Blume. Gesneriaceae (1). 2 Malay Archipelago.
Rhyncholacis Tul. Podostemaceae. 7 Guiana, Brazil.
Rhynchopera Borneo = *Carex* L. p.p. (Cyper.).
Rhynchopyle Engl. Araceae (v). 4 Borneo.
Rhynchoryza Buhl. (*Oryza* p.p. *EP.*). Gramineae (6). 1 Brazil.
Rhynchosia Lour. Leguminosae (III. 10). 120 trop. and subtrop.
Rhynchospermum Reinw. Compositae (3). 1 Himalaya to Japan.
Rhynchospora Vahl. Cyperaceae (II). 150 cosmop., esp. trop.
Rhynchosporous (fr.), ending in a beak.
Rhynchosstigma Benth. (*Toxocarpus* *BH.*). Asclepiadaceae (II. 3). 3 trop. W. Afr.
Rhynchosyllis Blume. Orchidaceae (II. 20). 2 Indomal. Cult. orn. fl.
Rhynchotectum Blume. Gesneriaceae (1). 9 Indomal.
Rhynchotheca Ruiz et Pav. Geraniaceae. 2 Peru.
Rhynchotropis Harms (*Indigofera* p.p.). Leguminosae (III. 6). 2 W. Afr.
Rhysopterus Coulter et Rose (*Cymopterus* p.p.). Umbelliferae (III. 5). 3 N. Am.
Rhysotoechia Radlk. Sapindaceae (1). 7 Austr., Malay Archip.
Rhysocarpus Endl. (*Melanopsidium* *EP.*). Rubiaceae (I. 8). 1 trop. Am.
Rhysolobium E. Mey. Asclepiadaceae (II. 3). 1 S. Afr.
Rhyssopteryx Blume. Malpighiaceae (1). 7 Malaya, N. Austr.
Rhyssostelma Deene. Asclepiadaceae (II. 1). 1 temp. S. Am.
Rhytachne Desv. Gramineae (2). 5 trop. Afr.
Rhyticarpus Sond. Umbelliferae (III. 5). 3 S. Afr.
Rhyticaryum Becc. Icacinaceae. 3 New Guinea.
Rhytleocos Becc. (*Cocot* p.p.). Palmae (IV. 2). 1 W.I.
Rhytidanthera Van Tiegh. Ochnaceae. 3 Colombia.
Rhytidophyllum Mart. Gesneriaceae (II). 12 W.I.
Rhytiglossa Nees = *Dianthera* Gronov. (*BH.*) = *Justicia* p.p.
Rhytispermum Link = *Lithospermum* L. (Borag.).
Rib grass, -wort plantain, Plantago.
Ribbon grass, Phalaris arundinacea L. var. *variegata*.
Ribeiria Accuda. Rosaceae (inc. sed.). Nomen.
Ribes L. Saxifragaceae (VI). 60 N. temp. and Andine; 4 in Brit. Shrubs, often with spines (emergences), and with racemes of fl. on 'short shoots.' G with two parietal plac. Fls. usu. homogamous, with self-pollination in default of insect-visits. *R. alpinum* L. is dioec. In *R. sanguineum* Pursh (cult. orn. shrub, flowering currant) the petals change from white to pink as the fls. grow older, and in *R. aureum* Pursh from yellow to carmine (see *Fumaria*, Boraginaceae). *R. rubrum* L. is the red, *R. nigrum* L. the black currant, *R. Grossularia* L. the gooseberry, all cult. for fr.
Rice, Oryza sativa L.; **Canada, Indian, Tuscarora-, Zizania aquatica** L.; -paper, *Tetralanax papyrifera* C. Koch.
Richardia Host. ex L. = *Richardsonia* Kunth.
Richardia Kunth = *Zantedeschia* Spreng. (Arac.).
Richardsonia Kunth. Rubiaceae (II. 101). 9 warm Am.
Richea K. Br. Epacridaceae (2). 8 Tasmania, Victoria.
Richella A. Gray. Anonaceae (2). 1 Fiji.

- Richeria** Vahl. Euphorbiaceae (A. I. 1). 3 Brazil, Peru.
Richthofenia Hosseus. Rafflesiaceae. 1 Siam.
Richweed (Am.), *Pilea*.
Ricinocarpos Desf. Euphorbiaceae (B. II). 13 Austr.
Ricinodendron Muell.-Arg. Euphorbiaceae (A. II. 5). 2 trop. W. Afr.
Ricinus (Tourn.) L. Euphorbiaceae (A. II. 2). 1 trop. Afr., *R. communis* L. (castor-oil), a shrub in trop., a herb in Eur. Monoec. The ♂ fl. has much-branched sta. The fr. explodes into the separate cpls., which at the same time open and drop the seeds. The seed is rich in oil, used medicinally and as a lubricant.
Ricotia L. Cruciferae (2). 5 E. Medit.
Riddellia Nutt. Compositae (6). 3 Mexico, Colorado, Utah.
Ridges on fruit, Umbelliferae.
Ridleya Pfitz. (*Sarcochilus* p.p. *BH.*). Orch. (II. 20). 1 Singapore.
Ridleyella Schlechter (*Bulbophyllum* p.p.). Orch. (II. 16). 1 N.G.
Ridolfia Moris. Umbelliferae (III. 5). 1 Medit.
Riedelia Oliv. Zingiberaceae (1). 6 Malay Archipelago.
Riedeliella Harms. Leguminosae (III. 1). 1 Brazil.
Riedlea Vent. = *Melochia* Dill. p.p. (Stercul.).
Riencourtia Cass. Compositae (5). 6 Guiana, Brazil.
Riesenbachia C. Presl. Onagraceae (2). 1 Mexico.
Rigens (Lat.), rigid.
Rigidella Lindl. Iridaceae (II). 3 Mexico, Guatemala.
Rigiolepis Hook. f. Ericaceae (III. 1). 1 Borneo.
Rigiopappus A. Gray. Compositae (6). 1 W. U.S.
Rigiostachys Planch. Simarubaceae. 2 Mexico.
Rindera Pall. Boraginaceae (IV. 1). 10 Medit., Eur., As.
Ringens (Lat.), gaping.
Ringworm shrub (W.I.), *Cassia alata* L.
Rinorea Aubl. (*Alsodeia* *BH.*). Violaceae. 60 trop.
Riocreuxia Decne. Asclepiadaceae (II. 3). 5 S. and trop. Afr.
Riparius (Lat.), of river banks.
Ripple-grass (Am.), *Plantago*.
Riqueuria Ruiz et Pav. Rubiaceae (inc. sed.). 1 Peru.
Bisleya King et Pantling. Orchidaceae (II. 6). 1 Himalaya.
Ritaia King et Pantling (*Ceratostylis* p.p.). Orchidaceae (II. a. III.). 1 Himalaya
Ritchiea R. Br. Capparidaceae (II). 15 W. trop. Afr.
Ritchieophyton Pax = *Givotia* Griff. (Euph.).
Rivalis (Lat.), growing by brooks.
Rivea Choisy. Convolvulaceae (1). 12 Indomal, S. Am.
Riverweed (Am.), *Podostemon*.
Rivina Plum. ex L. Phytolaccaceae. 5 trop. Am. P 4, A 4 or 8, G 1. Berry.
Rivularis (Lat.), growing beside rivulets.
Roast beef plant, Iris foetidissima L.
Robbia A. DC. (*Malouetia* *BH.*). Apocynaceae (II. 2). 7 Brazil, Guiana.
Robertiella Hanks (*Geranium* p.p.). Geran. 1 N. temp. (*G. Robertianum*).
Robertsonia Haw. = *Saxifraga* p.p. (Sax.).

Robin-run-in-the-hedge, *Nepeta Glechoma* Benth.

Robinia L. Leguminosae (III. 6). 6 N. Am. *R. Pseud-acacia* L. (false Acacia, locust) cult. in S. Brit. Stipules thorny. The leaflets move upwards in hot or dry air. The horiz. shoots branch in one plane, while the upright show radial symmetry. The base of the petiole forms a cap protecting a series of axillary buds.

Robinsonella Rose et Baker f. (*Sida* p.p.). Malvaceae (2). 6 Mexico, C. Am.

Robinsonia DC. Compositae (8). 8 Juan Fernandez.

Roborowskia Batalin. Papaveraceae (III). 1 C. As.

Rocambole (Am.), *Allium Scorodoprasum* L.

Rochea DC. Crassulaceae. 4 S. Afr. [*R. falcata* DC. = *Crassula*.]

Rochefortia Sw. Boraginaceae (II). 4 W.I., Colombia.

Rochelia Reichb. Boraginaceae (IV). 12 Medit. to Austr.

Rochonia DC. Compositae (3). 2 Madag.

Rock brake, curled, *Cryptogramma crispa* R. Br.; - **cross**, *Arabis*; - **pink**, *Dianthus*; - **rose**, *Helianthemum*, *Cistus*.

Rocket, *Hesperis*; **sea -**, *Cakile*; **yellow -**, *Barbarea*.

Rockia Heimerl (*Pisonia* p.p.). Nyctaginaceae. 1 Hawaiian Is.

Rod, golden, *Solidago*.

Rodetia Moq. (*Bosea* L.). Amarantaceae (2). 1 Himalaya.

Rodgersia A. Gray. Saxifragaceae (I). 2 China, Japan.

Rodigia Spreng. Compositae (13). 1 E. Medit.

Rodriguezia Ruiz et Pav. Orchidaceae (II. 19). 25 trop. Am. Between successive tubers there is often a long stretch of rhiz.

Rodschiedia Miq. (*Securidaca* L. p.p.). Legumin. (II. 2). 1 Guiana.

Roebelia Engelm. (*Geonoma* p.p. EP.). Palmae (IV. 1). 1 Colombia.

Roella L. Campanulaceae (I). 12 S. Afr.

Roemeria Medic. Papaveraceae (II). 3 Medit. to Afghanistan.

Roeperia F. Muell. (*Gynandropsis* p.p. BH.). Capparid. (V). 1 N. Austr.

Roeperocharis Reichb. f. (*Habenaria* p.p. BH.). Orchidaceae (II. 1). 4 trop. E. Afr.

Roettlera Vahl = *Didymocarpus* Wall. p.p. (Gesn.) (100 palaeotrop.).

Rogeria J. Gay. Pedaliaceae. 4 trop. Afr.

Rogiera Planch. = *Rondeletia* L. (Rubi.).

Rogue, a sport or variation from type.

Rohdea Roth. Liliaceae (VII). 1 Japan, *R. japonica* Roth. It is said to be fert. by snails crawling over the fls.

Rohria Vahl = *Berkheya* Ehrh. p.p. (Comp.).

Rojasia Malme (*Gothofreda* p.p.). Asclepiadaceae (II. 1). 1 Brazil.

Rojasiophyton Hassler. Bignoniaceae (I). 1 Paraguay.

Rolandra Rottb. Compositae (I). 1 trop. Am.

Rolfea Zahlbruckner. Orchidaceae (II. 7). 1 Guiana.

Rollandia Gaudich. Campanulaceae (III). 6 Hawaiian Is.

Rollinia A. St Hil. Anonaceae (4). 22 trop. Am. Some have ed. fr.

Rolliniopsis Safford (*Rollinia* p.p.). Anonaceae (4). 4 Brazil.

Roman nettle, *Urtica*.

Romanzoffia Cham. Hydrophyllaceae. 2 N.W. N. Am., N.E. As.

Romneya Harv. Papaveraceae (II). 1 California.

Romulea Maratti. Iridaceae (I). 50 Eur., Medit. (1 Brit.). Cult.

- Rondeletia** L. Rubiaceae (I. 3). 60 warm Am., W.I.
Ronnbergia E. Morr. et André. Bromeliaceae (4). 2 Colombia.

Root, the organ for absorption from the soil (in most cases); **adventitious** -, see Adv. Root; **aerating** -, **aerial** -, see Aer. and Aer. Roots; **apogeotropic** -, *Bowenia*; - **as suckers**, see Parasites; - **as tendrils**, *Vanilla*; - **as thorns**, *Acanthorhiza*; - **as tubers**, *Bravoa*, *Dahlia*, *Dioscorea*, *Paeonia*, *Thladiantha*, *Uragoga*; **bitter** -, *Lewisia*; **buttress** -, *Palmae*, *Pandanaceae*; - **cap**, *Lemna*, *Pandanus*; - **climbers**, see Climbing Pl.; **fibrous** -, in tufts of uniform length, as in a grass; - **hairs**, the absorbing hairs near the tip of a root; **paint** -, *Lachnanthes*; **parasitic** -, see Parasites; **Pareira** -, **white**, *Abuta*; - **rubber**, *Carpodinus*, *Clitandra*; - **stock**, an erect, short rhiz., as in many ferns; **true** -, the result of the radicle of the embryo; **waterplant** -, see Water Pl.

Ropalocarpus Boj. Tiliaceae. 3 Madag.

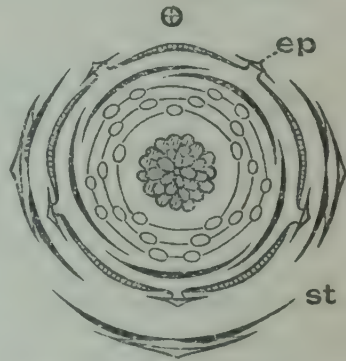
Ropourea Aubl. Verbenaceae (inc. sed.). 1 Guiana.

Roridula L. Droseraceae. 2 S. Afr. Like *Drosera*, but with no movement of the leaf-tentacles.

Roripa Scop. (*Nasturtium* R. Br. p.p.). Cruciferae (2). 50 *.

Rosa Tourn. ex L. Rosaceae (III. 6). 100 N. temp. and on trop. mts.; 6 in Brit., incl. *R. canina* L., the dog-rose. The thorns are epidermal appendages. The fl. of *R. canina* is a pollen fl. The fr. (hip) consists of a number of achenes enclosed in the fleshy recept. which closes over them after fert. *R. centifolia* L. is the form from which the cabbage rose is derived; and numerous forms of this and other sp. are cult. (see *Nat. Pfl.*). Otto of rose is distilled mainly from *R. damascena* Mill., cult. in the Balkans. [E. Willmot, *The genus Rosa*, London 1914; Baker, *Revised Classification of Roses* in Journ. Linn. Soc. 35, 1905, p. 70.]

Rosaceae (EP.; BH. incl. *Eucryphiaceae*). Dicots. (Archichl. Rosales). 100 gen., 2000 sp., cosmop. Trees, shrubs and herbs, usu. perenn.; 1. alt. (exc. *Rhodotypos*), simple or cpd., usu. stip., the stipules often adnate to the petiole. Veg. repr. in various ways, but esp. by creeping stems—runners as in strawberry, or suckers as in raspberry. Fls. term., in racemose or cymose infls. of various types; great variety of forms. Receptacle generally $\pm$ hollowed, so that various degrees of perigyny occur. Frequently there is a central protuberance bearing the cpls., even in the forms with very much hollowed recept. In a few cases (subfams. II, IV) the cpls. are united to the recept. and fully inf. The recept. often forms a part of the fr. Fl. usu. $\bar{\sigma}$ and actinom. K 5, often with an epicalyx of outer and smaller l. (see *Potentilla*), usu. imbr.; C 5, usu. imbr.; A 2, 3 or 4 times as many as petals, or ∞ , bent inwards in bud; G usu. apocarpous and sup., rarely syncarpous or inf.; cpls. as many or 2 or 3 times as many as



Floral Diagram of *Potentilla fruticosa* (after Eichler).
 ep.=epicalyx. st.=stipules
 of bracts and bracteoles.

petals, or ∞ or 1—4. Ovules anatropous, usu. 2 in each carpel. Style often lateral or basal. Fruit various, dry or fleshy; often an aggregate of achenes (*Potentilla*) or drupes (*Rubus*), or a single drupe (*Prunus*), or pome (*Pyrus*), and so on (*cf.* genera, esp. those mentioned, and *Fragaria*, *Geum*, *Rosa*, *Poterium*). Seed usu. exalbum.

Fls. in general of simple type, with slightly concealed honey and ∞ stamens, usu. protandrous. *Poterium* sp. are anemophilous.

Few are of economic value (see *Pyrus*, *Rubus*, *Fragaria*, *Prunus*), but many are favourites as garden plants and shrubs.

Classification and chief genera (after Focke). Closely related to Saxifragaceae, some genera being almost arbitrarily placed in one or the other; also nearly allied to Calycanthaceae, Combretaceae, Myrtaceae (floral diagram of *M.* practically the same as that of § II), Thymelaeaceae, and Leguminosae (through § VI).

- I. *SPIRAEOIDEAE* (carpels. 12—1, usu. 5—2, whorled, neither on special carpophore nor sunk in recept., with 2 or more ovules in each; fr. usu. dehiscent; stamens on broad base, tapering upwards; stipules often absent):
 1. *Spiraeae* (follicle, seeds not winged): *Spiraea*.
 2. *Quillajae* (follicle, seeds winged): *Quillaja*.
 3. *Holodisceae* (achene): *Holodiscus* (only genus).
- II. *POMOIDEAE* (carpels. 5—2, united to inner wall of recept., usually syncarpous; axis fleshy in fruit, stipules):

Pomarieae: *Pyrus*.
- III. *ROSOIDEAE* (carpels. ∞ or rarely 1 on carpophore, sometimes enclosed in axis in fruit; fruit 1-seeded indehiscent):
 1. *Kerrieae* (stipules distinct; axis not forming part of fruit; stamens tapering upwards from broad base; carpels few, whorled; stamens ∞): *Rhodotypos*, *Kerria*.
 2. *Potentilleae* (as 1, but carpels usu. ∞ , in a head, or rarely few and then stamens also few):
 - 2 a. *Rubinae* (drupes, no epicalyx): *Rubus*.
 - 2 b. *Potentillinae* (achenes; seed pendulous; usu. epicalyx): *Fragaria*, *Potentilla*.
 - 2 c. *Dryadinae* (as b, but seed erect): *Geum*, *Dryas*.
 3. *Cercocarpeae* (stipules slightly developed; torus tubular; carpel 1; achene): *Adenostoma*, *Purshia*.
 4. *Ulmariaceae* (torus flat or nearly so; stamens with narrow base): *Ulmaria*.
 5. *Sanguisorbeae* (torus cup-like enclosing carpels, hardening in fruit; carpels 2 or more): *Alchemilla*, *Agrimonia*, *Poterium*.
 6. *Roseae* (torus cup-like or tubular, enclosing ∞ carpels, and fleshy in fruit): *Rosa*.
- IV. *NEURADOIDEAE* (carpels. (5—10) united to torus, which is dry in fruit; herbs).

Neuradeae: *Neurada*.
- V. *PRUNOIDEAE* (carpel 1, rarely 2—5, free of torus; drupe; trees with simple leaves; style almost terminal; ovules pendulous; fls. regular).

Pruneae: *Nuttallia*, *Prunus*.
- VI. *CHRYSOBALANOIDEAE* (as V, but style basal and ovules erect):

1 a. Chrysobalaninae (nearly reg.): Chrysobalanus.

1 b. Hirtellinae (zygomorphic): Hirtella.

Rosales. The 21st order (*EP.*) of Archichlamydeae. The 11th (*BH.*) of Polypetalae.

Rosanthus Small (*Gaudichaudia* p.p.). Malpigh. (1). 1 Mexico.

Roscheria H. Wendl. Palmae (1v. 1). 1 Seychelles.

Roscoea Sm. Zingiberaceae. 13 Himal. to China. *R. purpurea* Sm., often cult., has a 4-fl. with two lips. Insects landing on the lower and probing are obstructed by two projecting spikes from the lower end of the anther; pressure on these brings the anther (with the stigma, which projects beyond it) down upon the insect's back. Protand. [Cf. *Salvia*.]

Rose, *Rosa*; **alpine** -, *Rhododendron ferrugineum* L., &c.; **Andes** -, *Befaria*; **-apple**, *Eugenia malaccensis* L.; **attar of** -, *Rosa damascena* Mill.; **-bay** (Am.), *Rhododendron*; **Christmas** -, *Helleborus*; **guelder** -, *Viburnum*; **Jamaica** - (W.I.), *Blakea trinervia* L.; **-mallow** (Am.), *Hibiscus*; **-mary**, *Rosmarinus officinalis* L.; **-of Jericho**, *Anastatica*; **-pink**, *Sabbatia*; **rock** -, *Helianthemum*; **-root**, *Sedum*; **-wood**, *Dalbergia*.

Roseanthus Cogn. Cucurbitaceae (3). 1 Mexico, Calif.

Roselle, *rozelle*, *Hibiscus Sabdariffa* L.

Rosenbachia Regel. Labiatae (1. 1), formerly Verben. 1 Turkestan.

Rosenbergia Oerst. (*Cobaea* p.p.). Polemoniaceae. 9 N. Am.

Rosenia Thunb. Compositae (4). 1 Cape Colony.

Rosiflorae (Warming). The 19th order of Choripetalae.

Rosilla Less. (*Dysodia* p.p. *EP.*). Compositae (6). 1 Mexico.

Rosin, *Pinus*; **-plant** (Am.), *Silphium*.

Rosmarinus (Tourn.) L. Labiatae (1. 2). 1 Medit., *R. officinalis* L. (rosemary), a xero. shrub with l. rolled back and stomata in hairy grooves on lower side (cf. Ericaceae, *Empetrum*). Oil of rosemary is employed in perfumery, &c.

Rostellaria Gaertn. f. Inc. sed. 1, habitat?

Rostellaria Nees (*Justicia* p.p.). Acanthaceae (1v. B). 10 As.

Rostellate, rostrate, beaked.

Rostellum, *Orchidaceae*.

Rostkovia Desv. Juncaceae. 1 S. Am., N.Z.

Rosulate, rosetted.

Rotaceus (Lat.), rotate, wheel-shaped, *Veronica*.

Rotala L. Lythraceae. 32 trop. and subtrop., in wet places.

Rotang, rattan.

Rotantha Baker (*Lawsonia* p.p. *EP.*). Lythraceae. 1 Madag.

Rothia Pers. Leguminosae (III. 3). 2 palaeotrop.

Rothrockia A. Gray. Asclepiadaceae (II. 4). 1 Arizona.

Rottboellia L. f. (*Bli.* excl. *Ophiurus* Gaertn. f.). Gramineae (2). 35 trop. and subtrop.

Rottlera Roxb. = *Mallotus* Lour. (Euph.).

Rotund, orbicular-oblong.

Roubieva Moq. (*Chenopodium* p.p. *EP.*). Chenopodiaceae (A). 2 S. Am.

Roucheria Planch. Linaceae. 4 Guiana.

Roucou, annatto, *Bixa Orellana* L.

Rouge, *Carthamus tinctorius* L.

Rouhamon Aubl. = *Strychnos* L. (Logan.).

Roulinia Decne. Asclepiadaceae (II. 1). 15 Texas to Argentina.

Rouliniella Vail. (*Roulinia* p.p.). Asclepiadaceae (II. 1). 7 C. Am.

Roupala Aubl. Proteaceae (II). 40 trop. Am., Austr., New Caled.

Roupellia Wall. et Hook. (*Strophanthus* p.p. EP.). Apocynaceae (II. 1). 1 W. Afr.

Rourea Aubl. Connaraceae. 40 trop.

Roureopsis Planch. Connaraceae. 2 Malaya.

Rousseau Smith. Saxifragaceae (V). 1 Mauritius.

Rousseauxia DC. Melastomaceae (I). 1 Madag.

Rousselia Gaudich. Urticaceae (4). 1 W.I.

Rouxia Husn. (*Agropyrum* p.p.). Gramineae (12). 1 Eur.

Rouya Coincy (*Thapsia* p.p.). Umbelliferae (III. 7). 1 Medit.

Rowan, *Pyrus Aucuparia* Ehrh.

Roxburghia Banks = *Stemona* Lour. (Stemon.).

Roxburghiaceae = *Stemonaceae*.

Royal fern, *Osmunda*; - **palm**, *Oreodoxa regia* H. B. et K.

Roydsia Roxb. Capparidaceae (III). 5 Indomal.

Royena L. Ebenaceae. 15 Afr. *R. lucida* L. useful timber.

Roylea Wall. Labiatae (VI). 1 Himalaya.

Roystonea O. F. Cook. (*Oreodoxa* p.p.) Palmae (IV. 1). 3 N. Am., W.I.

Rozelle, roselle, *Hibiscus Sabdariffa* L.

Rubacer Rydberg (*Rubus* p.p.). Rosaceae (III. 2). 5 N. Am.

Rubber, the coagulated latex of caoutchouc-containing plants, esp. *Hevea*, *Manihot*, *Castilloa*, *Landolphia*, *Funtumia*, &c.; now very extensively cult. in the trop., esp. *Hevea brasiliensis* Muell.-Arg., q.v. See Euphorbiaceae, Apocynaceae, Moraceae, &c. and Willis, *Agriculture in the Tropics*, Lock, *Rubber and Rubber Planting*; **African** -, *Funtumia*, *Landolphia*, &c.; **Bolivian** -, *Sapium*; **Borneo** -, *Wilughbeia*; **Ceara** -, *Manihot Glaziovii* Muell.-Arg., &c.; **Central American** -, *Castilloa*; **Columbian** -, *Sapium*; **Indian** -, *Ficus elastica* Roxb.; **Iré** -, *Funtumia*; **Lagos** -, *Funtumia*; **Madagascar** -, *Landolphia*, &c.; **Mangabeira** -, *Hancornia*; **Manicoba** -, *Manihot*; **Mexican** -, *Castilloa*; **Para** -, *Hevea brasiliensis* Muell.-Arg. &c.; **Pernambuco** -, *Hancornia*; **silk** -, *Funtumia*; **virgen** -, *Sapium*; **West Indian** -, *Castilloa*; and see *Carpodinus*, *Clitandra*, *Eucommia*, *Parameria*, *Mascarenhasia*, *Urceola*.

Rubens (Lat.), blush-red.

Rubeola Tourn. ex Adans. = *Crucianella* L. (Rubi.).

Ruber (Lat.), red.

Rubia (Tourn.) L. Rubiaceae (II. 11). 8 Eur., As., Am. (1 in Brit.). *R. tinctorum* L. is the madder, formerly cult. for its dye (alizarin), which is now prepared artificially.

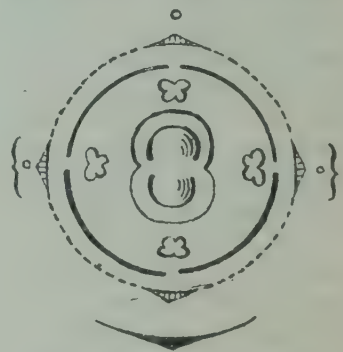
Rubiaceae (EP., BH.). Dicots. (Sympet. Rubiales). 350 gen., 5500 sp., one of the largest fams. of pl. Most are trop., but a number (esp. *Galieae*) are temp., and *Galium* itself has a few arctic sp. Trees, shrubs and herbs with decussate stip. entire or rarely toothed l. The stips. exhibit great variety of form; they stand either between the petioles (*interpetiolar*) or between the petiole and the axis (*intrapetiolar*),

and are frequently united to one another and to the petioles, so that a sheath is formed round the stem. The two stips.—one from each l.—that stand side by side are usu. united, and in the *Galieae*, to which the Brit. sp. belong, are leaf-like, and often as large as the ordinary l.; a char. appearance is thus produced, the plants seeming to have whorls of l.; and it is only by noting the axillary buds that a clue is obtained to the real state of affairs. The number of organs—l. and stips.—in a whorl varies from 4 upwards, according to the amount of 'fusion' or 'branching' of the stips. The simplest case is a whorl of 6, each leaf having 2 separate stips.; if the stips. be united in pairs, a whorl of 4 results; if each stip. be branched into two, we get a whorl of 10, and, if the centre pair of half-stips. on either side be united, a whorl of 8.

Several are myrmecophilous (*cf.* *Cecropia*, *Acacia*), *e.g.* *Myrmecodia*, *Cuviera*, *Duroia*, *Hydnophytum*.

Infl. typically cymose. Sol. term. fls. rare; small dichasia more frequent; most common case a much branched cymose panicle.

Fl. usu. ♀, reg., epig., 4- or 5-merous. K 4—5, epig., often almost absent, usu. open in aestivation, sometimes with one sepal larger than the rest and brightly coloured (*Mussaenda*, &c.); C (4—5), valvate, conv., or imbr.; A 4—5, alt. with petals, epipet.; $\bar{G}$ (2) rarely (1— ∞), 2-loc. with 1— ∞ anatropous ov. in each loc.; ov. erect, pend., or horiz.; style simple; stigma capitate or lobed. Caps. (septic- or loculi-cidal), berry or schizocarp. Embryo small, in rich endosp.



Floral diagram of *Asperula*,
after Eichler.

Most have conspic. insect-pollinated fls. The Brit. sp. have small fls. with freely exposed or slightly concealed honey, chiefly visited by flies; many trop. sp. have bee- and Lepidoptera-fls. with long tubes. Honey usu. secreted by an epig. nectary round base of style. Heterostylism is common, and dioecism sometimes occurs.

Several are of economic importance, *e.g.* *Cinchona*, which yields quinine, while many of its allies have also valuable alkaloids, *Coffea* (coffee), *Uragoga* (ipecacuanha), *Rubia*, &c.

Classification and chief genera (after Schumann). The R. are closely allied to Caprifoliaceae (*q.v.*) and less nearly to Compositae, &c. I. **CINCHONOIDEAE** (ovules ∞ in each loculus).

A. **CINCHONINAE** (fruit dry):

- a. Fls. solitary or in decussate panicles.
 - a. Fl. regular; seed not winged; C valvate.
 1. *Condamineae*: *Condaminea*.
 2. *Oldenlandieae*: *Oldenlandia*, *Houstonia*, *Pentas*.
 - b. As a, but C imbr. or conv.
 3. *Rondeletieae*: *Rondeletia*.
 - c. As a, but C 2-lipped.
 4. *Henriquezieae*: *Henriquezia*.
 - d. As b, but seed winged.

5. *Cinchoneae*: Cinchona, Bouvardia, Cosmibuena.

β. Fls. in heads.

6. *Naucleae*: Uncaria, Nauclea.

B. GARDENINAE (fruit fleshy):

7. *Mussaendeae* (C valvate): Mussaenda.

8. *Gardenieae* (C imbr. or conv.): Randia, Gardenia, Posoqueria, Duroia.

II. *COFFEOIDEAE* (ovules 1 in each loculus).

A. GUETTARDINAE (ovule pendulous; micropyle facing upwards):

1. *Vanguerieae*: Plectronia, Cuviera.

2. *Guettardeae*: Guettarda.

3. *Chiococceae*: Chiococca.

B. PSYCHOTRIINAE (ovule ascending; micropyle facing downwards):

a. C convolute.

4. *Ixoreae*: Coffea, Ixora, Pavetta.

β. C valvate.

a. Ovules inserted at base of loculus.

5. *Psychotrieae*: Psychotria, Rudgea, Uragoga, Lasianthus, Myrmecodia.

6. *Paederieae*: Paederia.

7. *Anthospermeae*: Nertera, Coprosma, Mitchella.

8. *Coussareeae*: Faramaea.

b. Ovules on septum.

9. *Morindeae* (stip. undivided, not leafy; trees and shrubs): Morinda.

10. *Spermacoceae* (stip. divided; shrubs and undershrubs): Borreria.

11. *Galieae* (stip. leafy; herbs): Sherardia, Crucianella, Asperula, Galium, Rubia.

Rubiales. The 8th order (*EP.*) of Sympetalae. The 1st (*BH.*) of Gamopetalae. The 8th (Warming) of Sympetalae.

Rubiginose, rust-coloured.

Rubus (Tourn.) L. Rosaceae (III. 2 a). 225 cosmop., esp. N. temp. (5 or 6 in Brit.). Fls. conspic.; honey secreted by a ring-shaped nectary upon the hollowed axis just within the insertion of the sta. Fls. homogamous, visited by many insects, including bees. Fr. an aggregate of drupes. *R. Chamaemorus* L., the cloudberry (arctic, Scotland), has creeping underground stems by means of which a large veg. repr. is carried on. Fls. sol., term. and unisexual, occasionally ♀. *R. Idaeus* L. (raspberry) multiplies largely by suckers—stems which grow out horiz. beneath the soil to some distance, then turn up and give rise to new pl. which flower in their second year. *R. fruticosus* L. (a general specific name for the ∞ var. of the common bramble or blackberry) is a hook-climber (the hooks being emergences) sprawling over the surrounding vegetation. Branches which reach the soil often take root there and grow up into new plants. *R. caesius* L. (dewberry) has fr. covered with bloom (wax) like grapes. *R. occidentalis* L. is the black-cap raspberry or trimbleberry of N. Am. *R. australis* Forst. f. has the blades of the leaves reduced to the minimum. Many sp. and vars. of blackberry, rasp-

berry, &c. are cult. ed. fr. The loganberry, a form which appeared in 1881 in the grounds of Judge Logan at Santa Cruz, Calif., is usually supposed to be a hybrid, but this is disputed. See *Journ. of Hered.* Nov. 1916, p. 504.

Ruckeria DC. Compositae (8). 3 S. Afr.

Rudbeckia L. (incl. *Lepachys* Rafin.). Compositae (5). 35 N. Am. Cult.

Ruderalis (Lat.), of waste places.

Rudgea Salisb. Rubiaceae (II. 5). 100 trop. Am., W.I. Some are heterostyled.

Rudimentary organs, organs repres. by functionless rudiments.

Rudolphia Willd. Leguminosae (III. 10). 3 W.I., C. Am.

Rue, *Ruta graveolens* L.; **goat's -**, *Galega*; **meadow -**, *Thalictrum*.

Ruellia Plum. ex L. Acanthaceae (IV A). 210 trop. and subtrop. The capsule explodes. The seeds possess surface hairs which, when wetted, swell and adhere to the soil. Cult. orn. fl.

Ruelliola Baill. Acanthaceae (IV. A). 1 Madag.

Ruelliopsis C. B. Clarke. Acanthaceae (IV. A). 2 S. trop. Afr.

Rufescens (Lat.), becoming reddish; **rufous**, reddish.

Rugose (dim. rugulose), wrinkled.

Ruizia Cav. Sterculiaceae. 3 Bourbon.

Rulac Adans. = *Acer* Tourn. (*Acer*).

Rulingia R. Br. Sterculiaceae. 17 Austr., Madag.

Rumex L. Polygonaceae (I. 2). 100, esp. N. temp. (12 Brit., docks and sorrels). Fls. of the type usual in the fam., wind-fert., with large stigmas (see fam. for diagram, and cf. *Rheum*). Some have adv. shoots upon the roots, e.g. *R. acetosella* L. *R. Hydrolapathum* Huds. is said to produce aerating roots like a mangrove. The roots of *R. hymenosepalus* Torr. (N.W. Am.), the Canaigré, are used for tanning.

Rumfordia DC. Compositae (5). 3 Mexico.

Ruminate (endosp.), marbled; or marked by wavy transv. lines. *Anon.*

Rumphia L. (*Cordia* p.p. *EP.*). Boraginaceae (I), formerly Anacardiaceae. 1 Malaya.

Runcina Allem. Inc. sed. Nomen.

Runcinate (l.), like dandelion, *Taraxicum officinale* Weber.

Rungia Nees. Acanthaceae (IV. B). 24 trop. As. and Afr.

Runner, a creeping stem taking root at the nodes, *Ajuga*, *Fragaria*, *Hydrocharis*, *Isoloma*, *Limosella*, *Nephrolepis*, *Ranunculus*.

Rupestris, **rupicolus** (Lat.), growing on banks.

Rupicola Maiden et Betche. Epacridaceae (2). 1 Austr.

Ruppia L. Potamogetonaceae. 1 temp. and subtrop., *R. maritima* L., in salt or brackish water. A slender swimming pl., with the habit of a Potamogeton. The fls. are borne just at the surface of the water, where fert. occurs by floating pollen. Each spike of 2 fls. not enclosed in the spathe at the flowering time. The fl. has 2 sta. with small outgrowths from the connectives, and 4 cpls.

Ruprechtia C. A. Mey. Polygonaceae (III. 2). 25 warm S. Am.

Rupture-wort, *Herniaria*.

Ruralis (Lat.), of rustic places.

Rusa grass (and oil), geranium grass, *Cymbopogon Martini* Stapf.

Rusbya Britton (*Anthopteris* EP.). Ericaceae (III. 2). 2 Bolivia.

Rusbyanthus Gilg. Gentianaceae (I). 1 Bolivia.

Rusbyella Rolfe. Orchidaceae (II. 19). 1 Bolivia.

Ruscus (Tourn.) L. Liliaceae (VII). 3 Medit., Eur. *R. aculeatus* L., butcher's broom, in Brit., a small shrub. In the axils of scaly l. stand leaf-like phylloclades; half-way up each is another scaly l., in whose axil stands the fl. Berry. [Cf. *Asparagus* and *Semele*.]

Rush, *Juncus*; **beak-**, *Rhynchospora*; **bul-**, *Typha*; **Dutch-**, *Equisetum*; **flowering-**, *Butomus*; **-grass** (Am.), *Sporobolus*; **spike-**, *Eleocharis*; **wood-**, *Luzula*.

Ruspolia Lindau. Acanthaceae (IV. B). 2 Somaliland.

Russelia Jacq. Scrophulariaceae (II. 4). 8 trop. Am. *R. juncea* Zucc., often cult., is xero. with much reduced l. and pendulous green stems. Shoots sometimes appear under cult. with broad l. (perhaps a reversion to an ancestral type).

Russian thistle, *Salsola Kali*, L., var. *ragus* Moq.

Russowia C. Winkler. Compositae (II). 1 Turkestan.

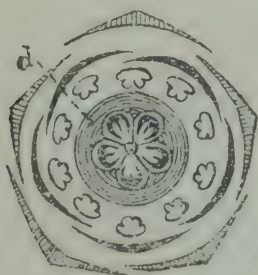
Rust, *Berberis*, *Triticum*.

Rustia Klotzsch. Rubiaceae (I. 1). 6 trop. Am.

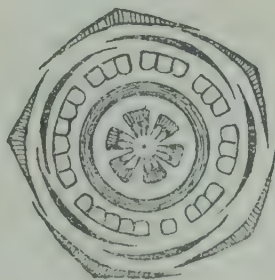
Ruta (Tourn.) L. Rutaceae (I). 50 Medit., As. *R. graveolens* L., rue, cult., is a strongly smelling shrub, owing to the presence in the l., &c., of an ethereal oil. The terminal fl. of the infl. is 5-merous, the lat. fls. 4-merous. The sta. lie in pairs in the boat-like petals; one by one they bend upwards over the stigma, dehisce and fall back; when all have done this, the stigma ripens, and finally the sta. again move up and effect self-fert. Chiefly visited by small flies. Rue is a narcotic and stimulant.

Rutabaga, *Brassica campestris* L.

Rutaceae (EP., BH. add § II to *Meliaceae*). Dicots. (Archichl. Geraniales). 100 gen., with 800 sp. trop. and temp., esp. S. Afr. and Austr. Most are shrubs and trees, often xero., frequently of heath-like habit (e.g. *Diosma*). L. alt. or opp., exstip., usu. cpd., with



A



B

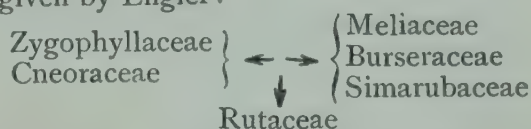
Floral diagrams of Rutaceae, after Eichler. A, *Ruta graveolens* (d=disc); B, *Citrus Aurantium*, single case showing variable numbers in stamen-bundles.

glandular dots, often aromatic. In many *Aurantiaeae* there are short shoots whose l. are reduced to thorns (cf. *Cactaceae*). Infl of various forms, usu. cymose. Fl. ♀, rarely unisexual, reg. or ♂, 5-4-merous (see *Ruta*), with a large disc below the G. K 5 or 4, the odd sepal

post.; C 5 or 4 imbr.; A 10 or 8, obdiplost. or 5, 3, 2, or ∞ , with intr. anthers; $\underline{G}$ (5 or 4), rarely (3—1) or (∞), often free at base and united above by the style (*cf.* Apocynaceae), multiloc.; ov. 2— ∞ in each loc., anatr. with ventral raphe and micropyle facing upwards. Fr. various; schizocarps, drupes, berries, &c. Seeds with or without endosp.

Several *R.* are or have been used in medicine, chiefly on account of the oils they contain, *e.g.* Ruta, Galipea, Toddalia, &c. Citrus yields important fruits (orange, &c.), and Chloroxylon a timber.

Classification and chief genera (after Engler): The groups of *R.* differ considerably among themselves, and several of them were formerly regarded as independent fams. The relationships to allied fams. are thus given by Engler:



I. *RUTOIDEAE*. Cpls. usu. 4—5, rarely 3—1, or > 5 , often only united by the style, and $\pm$ divided when ripe; loculic. dehiscence usu. with separation of the endocarp; rarely 4—1 fleshy drupes.

1. *Zanthoxyleae* (woody plants, usu. with small greenish, reg., often unisexual fls.; cpl. rarely with > 2 ovules; embryo with flat cots. in endosp.): *Zanthoxylum*, *Fagara*, *Choisya*.

2. *Ruteae* (herbs or undershrubs, rarely shrubs, with moderate sized $\varnothing$ fls., sometimes slightly $\pm$; cpls. usu. with > 2 ov.; endosp.): *Ruta*, *Dictamnus*.

3. *Boronieae* (undershrubs and shrubs, with reg. usu. $\varnothing$ fls.; endosp. fleshy, otherwise as 2): *Boronia*, *Eriostemon*, *Correa*.

4. *Diosmeae* (undershrubs and shrubs, rarely trees with simple l.; exalbum., embryo usu. straight with fleshy cots.): *Calodendron*, *Adenandra*, *Diosma*.

5. *Cusparieae* (shrubs and trees with reg. or $\pm$ fls.; endosp. little or 0; embryo curved, with radicle between the cots.): *Almeidea*, *Galipea*, *Cusparia*.

6. *Dictyolomeae* (fls. reg., haplostemonous; sta. with scales at base; cpls. with ∞ ovules, only united at the base; trees with double pinnate l.): *Dictyoloma*.

II. *FLINDERSIOIDEAE*. Cpls. (5—3), each with 2—8 2-ranked erect ovules; capsule loculic. or septic. with persistent endocarp; seed winged, exalbum.; woody plants with lysigenous glands.

Flindersieae: *Flindersia*, *Chloroxylon*.

III. *SPATHHELIOIDEAE*. Cpls. (3) each with 2 pend. ov.; drupe winged; secretory cells and lysigenous oil-glands at margins of l.

Spathelieae: *Spathelia*.

IV. *TODDALIOIDEAE*. Cpls. (5—2) or 1, each with 2—1 ov.; drupe or dry winged fr.; endosp. or 0; l. and bark with lysigenous oil-glands.

Toddalieae: *Ptelea*, *Toddalia*, *Skimmia*.

V. *AURANTIOIDEAE*. Berry, often with periderm, and

with pulp derived from sappy emergences of cpl. wall. Seeds exalbum., often with 2 or more embryos. Lysigenous oil-glands.

Aurantieae: Glycosmis, Limonia, Atalantia, Feronia, Aegle, Citrus.

Ruthea Bolle (*Lichtensteinia* BH.). Umbelliferae (III. 5). 4 Afr.

Rutidea DC. Rubiaceae (II. 4). 15 trop. Afr., Madag.

Rutidosis DC. Compositae (4). 6 Austr.

Rutilans (Lat.), with glowing fls.

Rutilia Vell. Inc. sed. 1 Brazil.

Ruttya Harv. Acanthaceae (IV. B). 3 S. Afr.

Ruyschia Jacq. Marcgraviaceae. 3 trop. Am.

Ryania Vahl (*Patrisia* Rich.). Flacourtiaceae (7). 10 N. trop. S. Am.

Rydbergia Greene (*Actinella* p.p.). Compositae (6). 2 N. Am.

Rye, *Secale cereale* L.; -grass, *Lolium perenne* L.; **French --**, *Arrhenatherum*.

Rylstonea R. T. Baker. Myrtaceae (inc. sed.). 1 Austr.

Ryncospora Vahl. Cyperaceae (II). 175 temp. and trop.; 2 in Brit. in wet bogs (beak rush).

Ryparosa Bl. Flacourtiaceae (3). 10 S. E. As.

Ryssopterys Blume ex A. Juss. Malpighiaceae (1). 7 E. Indomal.

Ryssosciadium O. Ktze. = *Rhysopterus* Coulter et Rose (Umbell.).

Ryticaryum Becc. Icacinaceae. 4 New Guinea.

Rytidocarpus Coss. Cruciferae. 1 Morocco.

Rytidotus Hook. f. (*Bobea* p.p. EP.). Rubiaceae (II. 2). 1 Hawaiian Is.

Sabadilla Brandb. et Ratzebg. (*Schoenocaulon* A. Gray BH.). Liliaceae (1). 5 Georgia to Venezuela.

Sabal Adans. Palmae (I. 2). 10 warmer Am., W.I. *S. Palmetto* Lodd., &c. (palmetto or thatch palm), l. are used for thatching; the wood is also useful.

Sabaudia Buscalioni et Muschler. Labiatae (VII). 1 C. Afr.

Sabazia Cass. Compositae (5). 2 Mexico.

Sabbata Vell. Compositae (inc. sed.). 2 Brazil.

Sabbatia Adans. Gentianaceae (1). 12 N. Am. (rose pinks).

Sabia Colebr. Sabiaceae. 20 S. and E. As.

Sabiaceae (EP., BH.). Dicots. (Archichl. Sapindales). 4 gen., 65 sp., trop. and E. As. Trees, shrubs or lianes with alt. exstip. imparipinnate or simple l. Infl. a panicle or cymose panicle, with bracts and bracteoles. Fls. usu. ♂. K (3—5), imbr. or free; C 4—5, sometimes united at base, imbr., the inner 2 much reduced; A 5, opp. petals, all or only 2 fertile, the rest being staminodial; $\overline{G}$ (2) 2-loc.; in each loc. usu. 2 axile pend. or horiz. semi-anatr. ov. with micropyle upwards. Indeh. fr. with exalbum. seeds. *Chief genera*: *Sabia*, *Meliosma*.

Sabicea Aubl. Rubiaceae (I. 7). 30 trop. Am., Afr., Madag.

Sabina Hall = *Juniperus* Tourn. p.p. (Conif.).

Sabinea DC. Leguminosae (III. 6). 3 Panama, W.I.

Sabre bean, *Canavalia ensiformis* DC.

Sabulina Reichb. = *Arenaria* Rupp. (BH.). = *Alsine* Scop. p.p.

Sac, a pouch; **saccate**, with a pouch.

Saccardophytum Spegazzini. Solanaceae (inc. sed.). 1 Patagonia.

- Saccellium** Humb. et Bonpl. Boraginaceae (11). 1 Peru, Argentina.
- Saccharodendron** Nieuwland (*Acer* p.p.). Aceraceae. 5 N. Am.
- Saccharum** L. Gramineae (2). 12 trop., subtrop., incl. *S. officinarum* L. (sugar cane), a native(?) of trop. E. As., now cult. in most warm regions, esp. Java, Hawaii, U.S., &c. From the rhiz. there spring each year shoots which may reach 12—15 feet and a thickness of 2 inches; the outer tissues have much silica in their cell-walls. The infl. is a dense woolly spike, the first and second glumes of each spikelet being covered with long hairs. The cult. form has always been veg. propagated (pieces of the haulm, each bearing a bud, are planted), but recently a more vigorous race has been raised from seed. The sugar is contained in the soft central tissues of the stem; the canes are cut before flowering and crushed between rollers to extract the juice; afterwards it is boiled down under reduced pressure and laid out to crystallise.
- Saccocalyx** Coss. et Dur. (*Satureia* p.p. *BH.*). Labiat. (vi). 1 Alger.
- Saccoglossum** Schlechter. Orchidaceae (11. 16). 2 New Guinea.
- Saccoglottis** Endl. Humiriaceae. 10 trop. S. Am., Afr.
- Saccolabium** Blume. Orchidaceae (11. 20). 50 Indomal. Cult. orn. fl.
- Saccolaria** Kuhlmann. Lentibulariaceae. 1 Upper Amazon.
- Saccolepis** Nash (*Panicum* p.p.). Gramineae. 5 N. Am.
- Saccoloma** Kaulf. Polypodiaceae. 8 trop. Am., E. As.
- Saccopetalum** Bennett. Anonaceae (2). 5 trop. As., Austr.
- Saccostoma** Wall. Labiatae (inc. sed.). 1 Indomal.
- Sachsia** Griseb. Compositae (4). 3 Cuba.
- Sack tree** (Ceylon), *Antiaris toxicaria* Leschen.
- Sacleuxia** Baill. Asclepiadaceae (11. 1). 1 Zanzibar.
- Sacoglottis** Mart. = *Saccoglottis* Endl. (Humir.).
- Sacred bean or lotus**, *Nelumbium speciosum* Willd.
- Sacrosphendamus** Nieuwland (*Acer* p.p.). Aceraceae. 1 N. Am.
- Sadiria** Mez (*Pimelandra* p.p.). Myrsinaceae (11). 4 Indomal.
- Sadleria** Kaulf. Polypodiaceae. 4 Hawaiian Is.
- Safflower**, *Carthamus tinctorius* L.
- Saffordia** Maxon. Polypodiaceae. 1 Peru.
- Saffordiella** Merrill (*Leptospermum* p.p.). Myrt. (11. 1). 1 Phil. Is.
- Saffranhout**, *Elaeodendron croceum* DC.
- Saffron**, *Crocus sativus* L.; **meadow-**, *Colchicum autumnale* L.
- Sage**, *Salvia*, esp. *S. officinalis* L.; **-brush**, *Artemisia tridentata* Nutt., &c.; **-rose** (W.I.), *Turnera*; **wood-**, *Teucrium*.
- Sageraea** Dalzell (*Bocagea* *BH.*). Anonaceae (1). 6 Indomal.
- Sageretia** Brongn. Rhamnaceae. 12 warm E. As, N. Am.
- Sagina** L. Caryophyllaceae (1. 1). 20 N. temp.; 4 in Brit. (pearl-wort). Small herbs with inconspic., sometimes apert. fls.
- Sagittaria** Rupp. ex L. Alismaceae. 33 Am., temp. |✱, incl. *S. sagittifolia* L. (arrow-head) in Eur. (incl. Brit.), a water-plant with a short rhiz. bearing l. of various types, the number of each kind depending on the depth of the water, &c. The fully submerged l. are ribbon-shaped, the floating ones have an ovate blade, whilst those (usually the majority) that project above water are arrow-shaped (sagittate). In the axils are formed the 'renewal' shoots which last over the winter, short branches which burrow into the mud and swell up at the ends

each into a large bud whose central axis is swollen with reserve-materials; in spring this develops into a new plant. The diclinous racemose infl. projects above water; the ♀ fls. are lower down than the ♂. The ♂ contains ∞ sta., the ♀ ∞ cpls.

Sagittate (l.), with two lobes at base projecting towards stem.

Sagittipetalum Merrill. Rhizophoraceae. 1 Phil. Is.

Sago, *Metroxylon*, and *Arenga*, *Caryota*, *Cycas*, *Oreodoxa*, &c.

Sagotanthus Van Tiegh. (*Heisteria* p.p.). Olacaceae. 1 Guiana.

Sagotia Baill. Euphorbiaceae (A. II. 5). 1 N. Brazil, Guiana.

Sagraea DC. (*Clidemia* p.p. *EP.*). Melastomaceae (I). 20 trop. Am.

Saguerus Adans. = *Arenga* Labill. (Palm.).

Sagus Rumph ex Gaertn. = *Metroxylon* Rottb. (Palm.).

Sahagunia Liebm. (*Acanthinophyllum* Allem.). Moraceae (II). 3 trop. Am. *S. strepitans* Engl. (Braz.), good timber.

Sails, cf. Bamboos.

Sainfoin, *Onobrychis sativa* Lam.

St Dabeoc's heath, *Daboecia*; - **Ignatius' beans**, *Strychnos Ignatii* Berg.; - **John's bread**, *Ceratonia*; - - **wort**, *Hypericum*.

Saintpaulia H. Wendl. Gesneriaceae (I). 3 E. Afr., incl. *S. ionantha* H. Wendl. (Afr. violet). The fl. is like that of *Exacum*, with similar dimorphic symmetry. In some the style projects to the left over the C, in others to the right (cf. *Exacum*, *Cassia*).

Sakersia Hook. f. Melastomaceae (I). 2 Cameroons.

Sal, *Shorea robusta* Gaertn. f.

Salacia L. Hippocrateaceae. 100 trop., often lianes with dimorphic branches, one form suited for climbing.

Salacicrater Loes. Hippocrateaceae. 1 New Guinea.

Salacistis Reichb. f. (*Hetaeria* BH.). Orchidaceae (II. 2). 1 Java.

Salad oil, nominally olive oil, *Olea europea* L.

Salaxis Salisb. Ericaceae (IV. 2). 24 Cape Colony.

Salazaria Torr. Labiatae (IV). 1 S.W. U.S., Mexico.

Saldanhaea Bur. Bignoniaceae (I). 2 Brazil.

Saldania Sim. Leguminosae (III. 8). 1 S.E. Afr.

Saldinia A. Rich. Rubiaceae (II. 5). 2 Madag.

Salep, the dried tubers of some sp. of *Orchis* and (in India) *Eulophia*.

Salicaceae (*EP.*, *BH.*). Dicots. (Archichl. Salicales; anom. Incompletae BH.). 2 gen., 180 sp., N. temp., trop. and subtrop. Shrubs or trees with stip. l. and much veg. repr. by suckers. Fls. naked, in catkins or spikes, dioec. (many hybrids exist). The catkins arise in autumn and remain as buds through the winter, developing in early spring. The ♂ fl. consists of 2—30 sta. in the axil of a bract, the ♀ usu. of (2) cpls. transv. placed, syncarpous with parietal plac.; ovules ∞, anatropous. Seeds exalbum. with basal tufts of hairs. *Genera*: *Salix*, *Populus*.

Salicales. The 3rd order of Archichlamydeae.

Salicaria Tourn. ex Mill. = *Lythrum* L. (Lythr.).

Saliciflorae (Warming). The 1st order of Choripetalae.

Salicornia (Tourn.) L. Chenopodiaceae (A). 10 on sea-coasts. *S. herbacea* L. (saltwort) cosmop., incl. Brit. Succulent herbs, with the habit of a cactus, leafless and with jointed nodes. Fls. in groups of 3

or more, one group sunk in the tissue on either side of each internode.

P fleshy; sta. 1 or 2.

Salisburia Sm. = Ginkgo L. (Ginkg.).

Salix (Tourn.) L. Salicaceae. 160 cosmop. The sp. are difficult to separate and there are many hybrids (cf. *Rubus*, *Rosa*). 12 in Brit. (willow, sallow, &c.). Branching monopodial, but the term. bud usu. dies, and the next lat. bud continues the axis. Some have collateral buds in the axils. There is extensive veg. repr. by suckers. Some, e.g. *S. alba* L., are often pollarded, or cut off at a height of 8 feet or so; from the callus formed upon the wounds new shoots spring, and thus the 'crown' of shoots is produced. Among the Brit. sp. are *S. herbacea* L., the dwarf or arctic willow, a creeping alpine and arctic form, and *S. lanata* L., &c. alpine forms with very woolly l. The fls. contain honey, and as they appear in early spring, before the l., and when they have but few competitors, they receive a great many visits from insects, especially from bees. *S. viminalis* L. is the osier, whose twigs are used in making baskets, &c. *S. babylonica* L. is the weeping willow. *S. caprea* L. useful wood.

Sallal, *Gaultheria Shallon* Pursh.

Sallow, *Salix*.

Salmea DC. Compositae (5). 12 Mexico, W.I.

Salmeopsis Benth. Compositae (5). 1 S. Brazil, Paraguay.

Salmia Willd. = *Carludovica* Ruiz et Pav. (Cyclanth.).

Salomonina Heist. (*Polygonatum* p.p.). Liliaceae (VII). 2 N. Am.

Salomonina Lour. Polygalaceae. 5 E. As. Some are parasitic.

Salpichroa Miers. Solanaceae (2). 12 warm Am.

Salpiglossis Ruiz et Pav. Solanaceae (5). 8 S. Am. Cult. orn. fl.

Salpinga Mart. Melastomaceae (1). 3 S. Brazil. Cult. orn. fl.

Salpingacanthus Sp. Moore (*Ruellia* p.p. *EP.*): Acanth. (IV. A). 1 Brazil.

Salpingia Torr. et Gray (*Oenothera* p.p.). Onagr. (2). 4 Mexico, Texas.

Salpinxantha Hook. f. (*Geissomeria* BH.). Acanthaceae (IV. B). 1 Jamaica.

Salsify, *Tragopogon porrifolius* L.

Salsola L. Chenopodiaceae (B). 40 cosmop., maritime or on salt steppes. *S. Kali* L. (glass-wort) in Brit., a very fleshy plant with l. ending in spines. A var. *tragus* Moq. of this sp. (Russian thistle) has in recent years become a pest of agriculture in N. Am.

Salsuginosus (Lat.), growing where inundated by salt water.

Salt-bush, *Atriplex*, &c.; **-wort**, *Salsola*; **-steppe plants** (halophytes), *Chenopodiaceae*, *Frankeniaceae*, &c.

Saltia R. Br. Amarantaceae (2). 1 S. Arabia.

Salvador tea, *Gaultheria*.

Salvadora Garcin. ex L. Salvadoraceae. 2 W. As., Afr. *S. persica* L. is said to be the mustard of the Bible. Its l. taste like mustard.

Salvadoraceae (*EP.*, BH.). Dicots. (Sympet. Contortae; Gentianales BH.). 3 gen., 6 sp., As., Afr. Shrubs and trees with opp. entire stip. l. and racemose infls. Fls. ♀ or unisexual, reg. K (2—4); C (4—5) or 4—5, with teeth or glands on the inner side; A 4—5, epipet. or not; G (2), 1—2-loc. with 1—2 erect anatrop. ov. in each.

Fr. a 1-seeded berry or drupe. Seed exalbum. *Genera*: Azima, Dobera, Salvadora. The relationships are doubtful, for we do not know if the polypetal of A. and D. is original or secondary. If the former, the order must perhaps be placed near Celastraceae.

Salver-shaped (C), $\pm$ flat, with long tubular portion, *Primula*.

Salvertia A. St Hil. Vochysiaceae. 1 campos of S. Brazil.

Salvia (Tourn.) L. Labiatae (VI). 550 trop. and temp. *S. Verbenaca* L. (sage) and *S. pratensis* L. (clary) in Brit. The sta. are reduced to 2 (the ant.), each of which has a sort of T-shape, the connective of the versatile anther being greatly elongated. The stalks of the sta. stand up together across the mouth of the fl., and a bee, in pushing down towards the honey, comes into contact with the inner end of the anther, and raising it causes the outer to descend upon its back and to rub it with pollen. In some forms of *S.* both ends of the lever bear fertile anthers; but in most the useless half-anther at the inner end is aborted, and the outer half of the connective is much longer than the inner (compare *S. officinalis* with *S. pratensis*). The fl. is protandrous, and in the later stage the style bends down and places the stigma in position to be touched first by an entering insect. Some have coloured bracts at the top of the infl., adding to its conspicuousness. *S. officinalis* L. (Medit.) is the garden sage.

Salviacanthus Lindau. Acanthaceae (IV. B). 1 Cameroons.

Salviastrum Scheele. Labiatae (VI). 3 Texas, New Mexico.

Salvinia (Mich.) Schreb. Salviniaceae. 10 trop. and warm temp., incl. *S. natans* (L.) All. The pl. floats freely on the water; at each node is a whorl of three l., and the whorls alt. with one another. There are two floating l. derived from the upper half of a segment of the apical cell (see fam.), and a submerged l. derived from the lower. There are no roots, their function being performed by the finely divided submerged l. (cf. *Trapa*, *Ranunculus*, *Cabomba*). The sporocarps are borne several together as outgrowths from the base of a submerged l. The microspores germinate inside the sporangium, the prothalli emerging through its wall as fine tubes, at the end of which the antheridia form.

Salviniaceae. Filicales Leptosporangiateae. Two genera, *Salvinia* (l. in whorls of 3) and *Azolla* (l. in two ranks), with 15 sp., trop. and temp. Water plants, with a stem floating upon the water, and growing by a two-sided apical cell (3-sided in the young embryo, as in other Filicales). A dorsiventral construction thus arises; segments are cut off right and left from the apical cell, and the first division of each of these segments divides it into a dorsal and a ventral half. In *S.* the dorsal halves give rise to the floating, the ventral to the submerged l.; in *A.* the former give rise to the l., the latter to the branches and roots. The sporangia are grouped into sori; the sorus is enclosed in a highly developed indusium, forming a sporocarp. Each contains only one kind of sporangium (micro- or mega-sporangia). The sporocarp is an outgrowth of a l.—in *S.* of a submerged l., in *A.* of the ventral lobe of an ordinary l. The spore is covered with an *epispore*, consisting of hardened frothy mucilage. It sinks, when set free from the sporangium. On germ. the microspore forms a rudimentary δ prothallus consisting of one (? more) veg. cell and an antheridium. The megaspore forms

a ♀ prothallus, which remains enclosed in the burst spore, and has two parts, an upper small-celled green part on which are borne the archegonia, and a lower colourless part (of one or more large cells), in which reserves are stored up for the use of the young plant which will be formed from a fert. ovum (*cf.* *Selaginella* and *Phanerogams*).

Salzmanna DC. Rubiaceae (II. 3). 1 E. Brazil.

Samadera Gaertn. Simarubaceae. 7 Madag., Indomal.

Saman, *Pithecolobium Saman* Benth.

Samara L. = *Embelia* Burm. p.p. (*Myrsin.*).

Samara, a winged 1-seeded indeh. achene or nut, *Acer*, *Banisteria*, *Fraxinus*, *Liriodendron*, *Ptelea*, *Pterocarpus*, *Ulmus*, *Ventilago*.

Sambucus (Tourn.) L. Caprifoliaceae. 20 N. temp., S. Am., As. to Austr. *S. nigra* L. (elder) and *S. Ebulus* L. in Brit. Differs from the rest of the fam. in having cpd. l. and extr. anthers; it also possesses well-marked stipules. Lenticels show clearly in the bark. *S. nigra* L. shows serial adv. buds. There has been some discussion about the proper position to be assigned to it; it has been put in Valerianaceae or in a new family, *Sambucaceae*, forming a link between Rubiales and Aggregatae. A wine is prepared from elder berries.

Sameraria Desv. (*Isatis* BH.). Cruciferae (2). 7 E. Medit.

Samoa millet, *Panicum*.

Samolus (Tourn.) L. Primulaceae. 10 cosmop., esp. ✱; *S. Valerandi* L. (brook-weed) in Brit. The whole pl. dies down in autumn, but young shoots form in summer and take root. The bracts of the fls. are 'adnate' to the axes, so as to look like sol. bracteoles (*cf.* Solanaceae).

Samphire, *Crithmum maritimum* L., (Am.) *Salicornia*.

Samuela Trelease. Liliaceae (VI). 2 Mexico, California.

Samyda L. Flacourtiaceae (7). 4 W.I., Mexico.

Samydaceae (BH.). A fam. in Passiflorales, comprising the gen. *Samyda*, *Casearia*, *Banara*, *Abatia*, *Homalium*, &c.; placed in Flacourtiaceae by Engler.

Sanchezia Ruiz et Pav. Acanthaceae (IV. A). 10 trop. S. Am.

San Domingo apricot, *Mammea americana* L.

Sand-binding plants, *Acacia*, *Ammophila*, *Carex*, *Distichlis*, *Elymus*, *Larrea*, *Lepidosperma*, *Stenotaphrum*, &c.; - **bur**, *Cenchrus tribuloides* L.; - **box tree**, *Hura*; - **dunes**, **flora of**, *cf.* Tansley, *Types of Brit. Veg.*; - **spurrey** (Am.), *Spergularia*; - **wort**, *Arenaria*.

Sandalwood, *Santalum album* L.; **red -**, *Pterocarpus santalinus* L.

Sandarach, *Tetraclinis quadrivalvis* Vent.

Sandbergia Greene (*Arabis* p.p.). Cruciferae (4). 1 N.W. N. Am.

Sanderella O. Ktze. = *Parlatorea* Barb. Rodr. (Orch.).

Sanders wood, Sandalwood.

Sandersonia Hook. Liliaceae (I). 1 Natal.

Sandoricum Cav. Meliaceae (III). 6 Mauritius, Indomal. Some have ed. fr.

Sanguinaria Dill. ex L. Papaveraceae (II). 1 Atl. N. Am., *S. canadensis* L., the blood-root. It has a thick rhiz. giving off annually one l. and a 1-flowered scape. The rhiz. is used in medicine.

Sanguineus (Lat.), blood-coloured.

Sanguisorba Rupp. ex L. (*Poterium* BH.). 30 N. temp. 2 Brit.,

S. minor Scop. and *S. officinalis* L., anemophilous, the former with long pend. sta.

Sanhilaria Baill. Bignoniaceae (1). 1 S. Brazil.

Sanicle, *Sanicula europea* L.

Sanicula (Tourn.) L. Umbelliferae (II. 1). 20 cosmop. exc. Austr.

S. europaea L. (sanicle) in Brit. Fls. in cymose umbels, themselves arranged in dichasia. Fr. hooked, animal-distributed.

Sansevieria Thunb. Liliaceae (VI). 12 trop. Afr., As. Xero. with

fleshy l. *S. zeylanica* Willd. yields fibre (bow-string hemp).

Santalaceae (EP.; BH. incl. *Grubbiaceae*, *Myzodendraceae*). Dicots.

(Archichl. Santalales; Achlamydosporae BH.). 26 gen., 250 sp.,

of semi-parasitic shrubs, trees and herbs, resembling Loranthaceae

in many ways, trop. and temp. Some are stem-parasites like mistletoe,

others root-parasites like *Rhinanthus* (e.g. *Thesium*). L. opp. The

total infl. may be a raceme, spike, head, &c., but often, instead of the

single fl. in each axil, there is a little cyme of 3, as in Loranthaceae.

Fls. ♀ or unisexual, with perig. or epig. disc and a simple P (sepaloid

or petaloid); sta. =, and inserted on, the P-leaves. $\bar{G}$ 1-loc., with

a central placenta bearing 1—3 ovules. Nut or drupe; seed 1, with no

testa, and much endosp. Chief genera: *Santalum*, *Thesium*.

Santalales. The 14th order of Archichlamydeae.

Santalina Baill. Rubiaceae (I. 8). 1 Madag.

Santalodes O. Ktze., **Santaloides** Schellenb. = *Rourea* Aubl. p.p.

Santalum L. Santalaceae. 10 Indomal. Parasitic trees. *S. album* L.

(S. Ind., esp. Mysore) furnishes the true sandal-wood (yellow or white).

Oil is distilled from it.

Santiria Blume. Burseraceae. 30 Malaya.

Santiridium Pierre = *Pachylobus* G. Don p.p. (Burser.).

Santiriopsis Engl. (*Santiria* p.p.). Burseraceae. 1 S. Thome.

Santolina Tourn. ex L. Compositae (7). 8 S.W. Eur. *S. Chamaecyparissus* L. is officinal.

Sanvitalia Gualt. in Lam. Compositae (5). 8 warm Am. Cult. orn. fl.

Sap-green, *Rhamnus cathartica* L.; **-wood**, the young outer wood.

Sapidus (Lat.), with pleasant taste.

Sapindaceae (EP.; BH. incl. *Aceraceae*, *Hippocastanaceae*, *Meliantaceae*, *Staphyleaceae*). Dicots. (Archichl. Sapindales). 120 gen., 1000

sp., trop. and subtrop. 5 gen. (*Serjania*, *Paullinia*, &c.) with 300 sp.

are lianes, the rest erect trees or shrubs. The lianes climb by tendrils,

which are met. infl.-axes and are usu. branched or sometimes watch-

spring-like; their stems often show peculiar internal anatomy. L. alt.,

stip. in the climbing sp., usu. cpd., pinnate; in the climbing sp. there

is usu. a true term. leaflet, but not in the erect; in these one of the

last pair of leaflets often becomes term., so that the l. is asymmetric.

The tissues of the plants usually contain resinous or latex-like secretions

in special cells. The infl. is cymose, usu. a cincinnus, with bracts and

bracteoles.

Fl. unisexual (the sta. are apparently well developed in the ♀ so that it is easily mistaken for ♂, but the pollen is useless, and the anthers do not open), generally monoec., reg. or often obliquely 4-, 5- or 4-merous. K usu. 5, rarely (5), imbr. or rarely valvate or open, sometimes apparently 4-merous by union of 2 sepals; C usu. 5, imbr., with

well-marked disc between it and the sta.; A usu. 5 + 5 in one whorl, often with 2 absent, more rarely 5, 4, or ∞ , inserted within or rarely upon the disc round the rudimentary ovary; $\underline{G}$ in $\varnothing$ fl. usu. (3), 3-loc. with term. style; ovules usu. 1 in each loc., ascending, with ventral raphe. Fr. a caps., nut, berry, drupe, schizocarp, or samara, usu. large, often red; seed often arillate, with no endosp.; embryo usu. curved.

Many S. are of economic value; several yield valuable timber; Nephelium, Litchi, and others furnish ed. fr.

Classification and chief genera (after Radlkofer):

I. *EUSAPINDACEAE* (ov. sol. in loc., erect or ascending, micropyle down): *Serjania*, *Paullinia*, *Sapindus*, *Talisia*, *Schleichera*, *Litchi*, *Nephelium*, *Pappea*, *Cupania*, *Blighia*.

II. *DYSSAPINDACEAE* (ov. usu. 2 or several in each loc., in the first case erect or pend., in the second horiz., rarely 1 pend. with micropyle up): *Koelreuteria*, *Dodonaea*.

Sapindales. The 24th order (*EP.*) of Archichlamydeae. The 10th (*BH.*) of Polypetalae.

Sapindus Tourn. ex L. Sapindaceae (I). 11 trop. and subtrop. exc. Afr. and Austr. The berries of *S. Saponaria* L. (Am.) contain saponin, form a lather with water, and may be used as soap.

Sapium P. Br. Euphorbiaceae (A. II. 7). 35 trop. Seeds of *S. sebiferum* Roxb. (tallow-tree, China) are coated with fat; they also yield an oil by pressure. Some yield rubber (Bolivian, Colombian).

Sapodilla plum, *Achras Sapota* L.

Saponaria L. Caryophyllaceae (II. 2). 20 N. temp., chiefly Medit. *S. officinalis* L. (soapwort) in Brit. Its leaves lather if rubbed with water. Fls. protandrous, butterfly-visited.

Saponin, *Chlorogalum*, *Gouania*, *Limonia*, *Sapindus*, *Saponaria*.

Sapota Plum. ex Mill. = *Achras* L. (Sapot.).

Sapotaceae (*EP.*, *BH.*). Dicots. (Sympet. Ebenales). 35 gen., 600 sp., trop., mostly trees with entire leathery l., sometimes stip. They are commonly hairy with 2-shanked hairs, and contain secretory passages in pith, cortex and l. Fls. sol. or in cymose bunches in the l. axils or on old stems, bracteolate, $\varnothing$, reg. or not. K 2 + 2, 3 + 3, 4 + 4, or 5; C usu. equal in number to sepals, and alt. with the K as a whole, as in Cruciferae, rarely in 2 whorls. In *Mimusoapeae* the petals have dorsal appendages like themselves, giving the appearance of more than one whorl. Sta. in 2 or 3 whorls, but frequently the outer staminodial or absent; anthers commonly extr. $\underline{G}$, syncarpous, multiloc.; cpls. = or twice the number of sta. in a whorl, or more; ovules at base of axile placenta, one in each loc., anat. with micropyle facing down; style simple. Berry, the flesh sometimes sclerenchymatous near the surface. Seeds few or one, usually album.; endosp. oily; testa hard and rich in tannin.

Many S. furnish useful products, esp. gutta-percha and balata; see all genera below. A fam. of conspic. economic value.

Classification and chief genera (after Engler):

I. *Palaquieae* (petals without appendages): *Bassia*, *Payena*, *Palaquium*, *Achras*, *Butyrospermum*, *Sideroxylon*, *Chrysophyllum*.

II. *Mimusoapeae* (petals with appendages—see above): *Mimusops*.

- Sapote**, *Lucuma mammosa* Gaertn. f.
- Sappan wood**, *Caesalpinia sappan* L.
- Sapranthus** Seem. (*Porcelia* BH., *Uvaria* p.p. EP.). Anon. (1).
1 C. Am.
- Sapria** Griff. Rafflesiaceae. 1 Assam.
- Saprophytes**, plants which grow upon decaying organic matter and absorb the products of decay, *Burmanniaceae*, some *Gentianaceae* (*Bartonia*, *Obolaria*, &c.), *Monotropa*, some *Orchidaceae* (*Corallorhiza*, *Epipogon*, *Limodorum*, *Neottia*, &c.), *Triuridaceae*, the prothallus of *Ophioglossaceae*.
- Saprosma** Blume. Rubiaceae (11. 5). 12 Indomal.
- Sapu** (Ceylon), *Michelia Champaca* L.
- Sapucaia nut**, *Lecythis*.
- Saraca** L. Leguminosae (11. 3). 10 trop. As. Young shoots pend. (cf. *Amherstia*, *Brownea*). Fls. (scented at night) as temple offerings.
- Saracha** Ruiz et Pav. Solanaceae (2). 12 Bolivia to Mexico.
- Saranthe** Eichl. (*Myrosma* BH.). Marantaceae. 8 Brazil.
- Sararanga** Hemsl. Pandanaceae. 1 Solomon Is.
- Sarcanthidion** Baill. Icacinaceae. 1 New Caledonia.
- Sarcanthus** Lindl. Orchidaceae (11. 20). 30 Indomal., China. Cult.
- Sarcaulis** Radlk. Sapotaceae (1). 1 N. Brazil, Guiana.
- Sarcinanthus** Oerst. (*Carludovica* p.p. BH.). Cyclanth. 1 Costa Rica.
- Sarcobatus** Nees. Chenopodiaceae (B). 2 N. Am.
- Sarcocalyx** Walp. = *Aspalathus* L. (Legum.).
- Sarcocapnos** DC. Papaveraceae (III). 3 Medit.
- Sarcocarp**, the fleshy part of a drupe; -**testa**, of a seedcoat.
- Sarcocaulon** Sweet. Geraniaceae. 5 S. Afr. Xero.; fleshy stems.
When the l. falls the base of the petiole hardens to a thorn.
- Sarcocephalus** Afzel. ex R. Br. Rubiaceae (1. 6). 10 palaeotrop.
- Sarcochilus** R. Br. Orchidaceae (11. 20). 40 Indomal. Polynesia.
- Sarcochlaena** Thou. Chlaenaceae. 4 Madag.
- Sarcochlamys** Gaudich. Urticaceae (3). 1 Indomal.
- Sarcococca** Lindl. Buxaceae. 5 Indomal.
- Sarcocodon** N. E. Br. (*Caralluma* p.p. EP.). Asclep. (11. 3). 4 S. W. As.
- Sarcocolla** L. Penaeaceae. 4 Cape Colony.
- Sarcodes** Torr. Pyrolaceae. 1 California.
- Sarcodraba** Gilg et Muschler (*Draba* p.p.). Crucif. (4). 1 Patag.
- Sarcodum** Lour. Leguminosae (III. 6). 1 Cochinchina.
- Sarcoglottis** Presl (*Spiranthes* p.p. BH.). Orchid. (11. 2). 10 trop., subtrop.
- Sarcolaena** Thou. Chlaenaceae. 4 Madag.
- Sarcolobus** R. Br. Asclepiadaceae (11. 3). 4 Malaya.
- Sarcomelicope** Engl. (*Evodia* p.p.). Rutaceae (1). 1 New Caled.
- Sarcomphalus** P. Br. Rhamnaceae. 5 W. I. *S. laurinus* Griseb. timber.
- Sarcopetalum** F. Muell. Menispermaceae. 1 E. Austr.
- Sarcophrynium** K. Schum. Marantaceae. 12 W. trop. Afr.
- Sarcophyte** Sparrm. Balanophoraceae. 1 Cape Colony.

- Sarcopilea** Urb. Urticaceae (2). 1 S. Domingo.
- Sarcopodium** Lindl. (*Bulbophyllum* p.p.). Orchid. (II. 16). 20 E. Indomal.
- Sarcopteryx** Radlk. Sapindaceae (1). 8 E. Indomal.
- Sarcopyramis** Wall. Melastomaceae (1). 1 India.
- Sarcosperma** Hook. f. Sapotaceae (1). 4 E. Indomal.
- Sarcostemma** R. Br. Asclepiadaceae (II. 1). 12 trop. and subtrop. |*.
Leafless xero. with slightly fleshy stems.
- Sarcostigma** Wight et Arn. Icacinaceae. 3 Indomal.
- Sarcotheca** Blume. Linaceae. 2 Borneo, Malay Peninsula.
- Sarcotoechia** Radlk. (*Cupania* p.p.; *Ratonia* BH.). Sapindaceae (1).
2 Austr.
- Sarcozygium** Bunge (*Zygophyllum* p.p. EP.). Zygophyll. 1 Mongolia.
- Sarga** Ewart. Gramineae (8). 1 N.W. Austr.
- Sargentia** S. Wats. Rutaceae (IV). 1 Mexico, Calif. Fr. ed.
- Sargentodoxa** Rehder et Wilson. Lardizabalaceae. 1 China.
- Sarmentose**, forming long runners.
- Sarmienta** Ruiz et Pav. Gesneriaceae (1). 1 Chili.
- Sarothamnus** Wimm. = *Cytisus* L. p.p. (Legum.).
- Sarotheca** Nees = *Justicia* L. (Acanth.).
- Sarothra** L. = *Hypericum* Tourn. (Guttif.).
- Sarothrochilus** Schlechter (*Trichoglottis* p.p.). Orchidaceae (II. 20).
1 Siam, Burma.
- Sarracenia** L. Sarraceniaceae. 7 Atl. N. Am. (side-saddle fl.), in sunny marshy places. Low herbs with rosettes of rad. l.; each l. is repres. by a long narrow pitcher with a flat green wing of tissue on the ventral side, serving chiefly for assim. The general structure of the pitcher is similar to that found in *Nepenthes*; it has a fixed lid projecting over the mouth, and the lip is usu. turned down inwards. The mouth bears numerous honey-glands; below these comes the 'slide-zone,' then the zone of hairs (*cf.* *Nepenthes*), and at the bottom is water in which the insects are drowned. The pitchers are often brightly coloured. In *S.* the entire l. is a pitcher, while in *Nepenthes* it is only part of the l., and in *Cephalotus* only certain l. Many cult. orn.; many hybrids.
- Sarraceniaceae** (EP., BH.). Dicots. (Archichl. Sarraceniales; Parietales BH.). 3 gen., 9 sp., Am. Insectivorous pitcher-plants (see gen.) with rosettes of rad. l. and ♂ reg. fls. K 9—8—5, spiral, if > 5 the outer 3 small; C as many as inner sepals and alt. with them, or 0; A ∞; G (6—5—3) with ∞ anatr. ov. on inrolled cpl.-walls. Loculic. caps. with ∞ seeds; endosp. fleshy. *Genera*: *Heliamphora* (raceme; ovary 3-loc.), *Sarracenia* (fl. sol.; ovary 5-loc., the top of the pitcher simple), *Darlingtonia* (ditto, but the top of the pitcher fish-tail-shaped).
- Sarraceniales**. The 20th order of Dicots. Archichl.
- Sarsaparilla** O. Ktze. Liliaceae (X1). 1 trop. Am.
- Sarsaparilla**, *Smilax*.
- Sartwellia** A. Gray. Compositae (6). 2 Texas, Mexico.
- Saruma** Oliv. Aristolochiaceae. 1 S.W. China.
- Sasa** Makino et Shibata (*Bambusa* p.p.). Gramin. (13). 8 Japan.
- Sassafras** L. Lauraceae. 1 Canada to Florida, *S. officinale* Nees et

Eberm. (*Laurus Sassafras* L.). The wood and bark yield oil of sassafras, used in medicine.

Sassafridium Meissn. Lauraceae (I). 3 trop. Am., W.I.

Satanocrater Schweinf. Acanthaceae (IV. A). 2 trop. Afr.

Satinwood, *Chloroxylon Swietenia* DC.

Sativus (Lat.), cultivated or planted.

Sattadia Fourn. Asclepiadaceae (II. 1). 1 C. Brazil.

Satureia L. (incl. *Calamintha* Lam.). Labiatae (VI). 130 warm regions. Fls. gynodioec. *S. hortensis* L. and *S. montana* L. (summer and winter savories) cult. condiments.

Saturna Nor. Euphorbiaceae (inc. sed.). Nomen.

Satyria Klotzsch. Ericaceae (III. 2). 4 trop. Am.

Satyrium L. Orchidaceae (II. 1). 70 S. Afr. to trop. As. Fl. not twisted, so that labellum uppermost; it is prolonged backwards into two spurs. The actual summit of the column is occupied by the stigma, the anther being bent round $\perp$ to it.

Sau, *Albizzia stipulata* Boiv.

Sauerkraut, *Brassica oleraceae* L.

Saundersia Reichb. f. Orchidaceae (II. 19). 1 Brazil.

Saurauia Willd. Dilleniaceae. 75 trop. As., Am.

Sauroglossum Lindl. (*Spiranthes* p.p. *BH.*). Orchid. (II. 2). 3 trop. Am.

Sauromatum Schott. Araceae (VII). 6 palaeotrop. L. pedate (cymosely branched).

Sauropus Blume. Euphorbiaceae (A. I. 1). 20 Indomal.

Saururaceae (*EP.*; *Piperaceae* p.p. *BH.*). Dicots. (Archichl. Piperales). 3 gen., 4 sp., E. As. and N. Am. Herbs with $\varnothing$ fls., apparently primitively naked. A 6 or fewer; $\underline{G}$ 3—4 or (3—4), in the latter case with parietal plac.; ov. orthotr. Endo- and peri-sperm. Chief genera: *Saururus*, *Houttuynia*.

Saururus Plum. ex L. Saururaceae. 1 Japan to Phil. Is., 1 in E. U.S. Bog pl. with spikes of fls., br. usu. adnate to axis of its fl.

Saussurea DC. Compositae (II). 125 N. temp. *S. alpina* DC. alpine in Brit., with hairy l.; its fls. are blue, with sweet scent (the latter unusual in the order). Many have 3 cpls.

Sautiera Decne. Acanthaceae (IV. A). 1 Timor.

Sauvagesia L. Ochnaceae (Viol. *BH.*). 12 trop., esp. Brazil. 5 fertile sta., surrounded by ∞ stds. Cpls. 3. This gen. and a few others sometimes formed into a separate fam. or placed in Violaceae.

Sauvallea Wright. Commelinaceae. 1 Cuba.

Savannah, grass country broken by patches of forest or copse; -flower (W.I.), *Echites*; -wattle (W.I.), *Citharexylum*.

Savia Willd. Euphorbiaceae (A. I. 1). 4 W. Ind.

Savignya DC. Cruciferae (2). 2 E. Medit.

Savin, *Juniperus Sabina* L.

Savoury, *Satureia*.

Saw wort, *Serratula tinctoria* L.

Saxatilis (Lat.), growing on rocks.

Saxegothaea Lindl. Coniferae (Taxac. 3; see C. for gen. char.). 1 Andes of Patagonia. Fr. a many-seeded 'berry' like *Juniperus*.

Saxifraga Tourn. ex L. Saxifragaceae (I). 225 N. temp., Arctic,

Andes, chiefly alpine. 13 in Brit. (saxifrage). Most show xero. char., such as tufted growth, close packing of l. (esp. well shown in *S. oppositifolia* L.), succulence, hairiness, &c. Many are veg. repr. by offsets, or (e.g. *S. granulata* L.) by bulbils in the lower leaf-axils. Many exhibit chalk-glands at the tips or edges of the l. (e.g. *S. oppositifolia* at the tip); these are water-pores with nectary-like tissue beneath, secreting water containing chalk in solution. As the water evaporates, the chalk forms an incrustation. Fls. usu. in dich. cymes with cincinnus tendency. Every stage occurs from hypogyny to epigyny. Honey only partially concealed; fls. visited by miscellaneous insects. Most are protandrous. A few, e.g. *S. sarmentosa* Linn. f., have $\ddagger$ fls. **Saxifragaceae** (EP.; BH. incl. *Cephalotaceae*, *Cunoniaceae*). Dicots. (Archichl. Rosales). 70 gen., 650 sp. cosmop., chiefly temp. Most are perenn. herbs, a few shrubs or trees, with usu. alt., rarely stip. l. Many alpine and arctic forms of xero. habit. Infl. of various kinds, both racemose and cymose.

Fl. usu. $\frac{5}{8}$, reg., cyclic, 5-merous (exc. cpls.). Recept. flat or hollowed to various depths, so that sta. and P may be peri- or epigynous. K usu. 5; C 5, imbr. or valvate, sometimes (5) or ∞ ; A usu. 5+5, obdiplost.; cpls. rarely free and as many as petals, usually fewer and joined below, often 2; plac. parietal or axile, with several rows of anatr. ov.; styles as many as cpls. Fls. mostly protandrous. Capsule or berry. Seed with rich endosp. round a small embryo.

Of little economic importance; *Ribes* yields valuable fr. Many favourites in horticulture, e.g. *Saxifraga*, *Francoa*, *Philadelphus*, *Deutzia*, *Hydrangea*, *Escallonia*.

Classification and chief genera:

- I. **SAXIFRAGOIDEAE** (herbs of various habit; l. alt.; P 5- or rarely 4-merous; G usu. (2), hypo- or epi-gynous, 1- or 2-loc.): *Saxifraga*, *Tellima*, *Chrysosplenium*, *Parnassia*.
- II. **FRANCOIDEAE** (perenn. herbs with rad. l. and spikes or racemes on naked scapes; fl. 4-merous; G 4-loc.): *Francoa*.
- III. **HYDRANGEOIDEAE** (shrubs or trees; l. usu. opp., simple; P usu. 5-merous; sta. epig.; G 3—5-loc.): *Philadelphus*, *Deutzia*, *Hydrangea*.
- IV. **PTEROSTEMONOIDEAE** (shrubs with alt. stip. simple l.; sta. 10; $\bar{G}$ 5-loc.; ov. 4—6, on axile plac.): *Pterostemon*.
- V. **ESCALLONIOIDEAE** (shrubs or trees, rarely herbs; with simple alt. exstip. often leathery and gland-dotted l.; sta. = pets.; G superior to inferior; ov. ∞): *Brexia*, *Escallonia*.
- VI. **RIBESIOIDEAE** (shrubs with alt. simple exstip. l. and racemes of fls.; $\bar{G}$ 1-loc. with 2 parietal plac.; berry): *Ribes*.
- VII. **BAUEROIDEAE** (shrubs with opp. 3-foliate exstip. l. and simple axillary fls.; ovary semi-inf. with 2 parietal plac.; loculic. caps.): *Bauera*.

Saxifrage, *Saxifraga*; **burnet-**, *Pimpinella*; **golden-**, *Chrysosplenium*.

Saxifrageae (BH.) = Saxifragaceae.

Saxifragella Engl. Saxifragaceae (1). 1 Antarctic S. Am.

Saxifraginae (Warming). The 18th order of Choripetalae.

Saxifragopsis Small (*Saxifraga* p.p.). Saxifr. (1). 1 Calif.

Saxofridericia R. Schomb. Rapateaceae. 5 Guiana, N. Brazil,

Sayeria Kränzl. Orchidaceae (II. 15). 1 New Guinea.

Scabiosa (Tourn.) L. (*BH.* incl. *Knautia* L., *Pterocephalus* Vaill., *Succisa* Neck.). Dipsacaceae. 60 Eur., Medit.; 3 in Brit., incl. *S. (K.) arvensis* L. (scabious) and *S. Succisa* L. (devil's-bit scabious). The former has a large head of fls. (class B'); the C is drawn out upon the outer side (cf. Compositae), and this the more the further from the centre of the head. Honey is secreted by the upper surface of the ovary, and protected from rain by hairs. The sta. are ripe first, while the style with immature stigmas is quite enclosed in the C; later the sta. wither and the style occupies their place. The stigmas of the various fls. on the head ripen nearly together.

Scabious, *Scabiosa*; **sheep's bit-**, *Jasione montana* L.

Scabrous (dim. *scabrid*, *scaberulous*), scurfy.

Scaevola L. Goodeniaceae. 65 Austr., Polynes., trop. coasts. *S. Keenigii* Vahl furnishes a kind of rice paper; its pith is squeezed flat. It is a char. pl. of trop. beach jungle.

Scald, *Cuscuta*.

Scale leaves, the scaly l. on the outside of buds, rhizomes, &c., *Araceae*, *Casuarina*.

Scalesia Arn. Compositae (5). 15 Galapagos.

Scaligeria DC. (*Conopodium* p.p. *BH.*). Umbellif. (III. 4). 10 E. Medit.

Scalloped, crenate.

Scaly bulb, one with overlapping l., *Lilium*.

Scammony, *Convolvulus Scammonia* L.

Scandens (Lat.), climbing.

Scandivepres Loes. Celastraceae. 1 Mexico.

Scandix Tourn. ex L. Umbelliferae (III. 2). 12 Eur., Medit. *S. Pecten-Veneris* L. (Venus' comb) in Brit. The ripe mericarps separate with a jerk.

Scape, a stalk from the base of the pl. bearing only fls., *Amaryllidaceae*, *Taraxacum*.

Scapha Nor. = *Saurauja* Willd. (Dillen.).

Scaphispatha Brongn. Araceae (VII). 1 Bolivia.

Scaphochlamys Baker (*Kaempfera* p.p. *EP.*). Zingib. (I). 1 Malay Pen.

Scaphoid, boat-shaped, petals of *Loasa*.

Scaphopetalum Mast. Sterculiaceae. 5 trop. W. Afr.

Scaphosepalum Pftz. Orchidaceae (II. 8). 10 N. trop. S. Am.

Scaphyglottis Poepp. et Endl. Orchidaceae (II. 6). 10 trop. Am.

Scapigerous, scape-bearing.

Scarious, thin, dry, not green, stiff.

Scarlet runner, *Phaseolus multiflorus* Willd.

Scelochilus Klotzsch. Orchidaceae (II. 19). 4 Andes.

Scented fls., cf. Perfumed; - **orchis**, *Gymnadenia conopsea* R. Br.

Scepa Lindl. = *Aporosa* Blume (Euph.).

Sceptrocide Maxim. Urticaceae (I). 1 Japan.

Schachtia Karst. (*Duroia* p.p. *EP.*). Rubiaceae (I. 8). 1 Colombia,

Schaefferia Jacq. Celastraceae. 3 Texas to Colombia, W.I.

Schaetzelia Sch.-Bip. Compositae (2). 1 Mexico,

Schaffnera Benth. Gramineae (3). 1 Mexico,

- Schaffnerella** Nash (*Schaffnera* p.p.). Gramineae (3). 1 Mexico.
- Schaueria** Nees. Acanthaceae (IV. B). 8 trop. Am.
- Schedonnardus** Steud. Gramineae (11). 1 N. Am.
- Schedonorus** Beauv. = *Bromus* p.p. (Gram.).
- Scheelea** Karst. (*Attalea* p.p. *EP.*). Palmae (IV. 2). 5 trop. Am.
- Schefferomitra** Diels (*Miirephora* p.p.). Anon. (2). 1 New Guinea.
- Schefflera** Forst. (incl. *Heptapleurum* Gaertn.). Araliaceae (1). 150 trop.
- Schefflerodendron** Harms. Leguminosae (III. 6). 2 trop. Afr.
- Schelhammera** R. Br. Liliaceae (1). 2 E. Austr.
- Schenckia** K. Schum. Rubiaceae (I. 3). 1 S. Brazil.
- Scheuchleria** Heynh. Compositae (inc. sed.). Nomen.
- Scheuchzeria** L. Scheuchzeriaceae. 1 N. temp. and arctic, incl. Brit.; *S. palustris* L., a marsh plant.
- Scheuchzeriaceae** (*EP.*; *Naiadeae* p.p. *BH.*) (*Juncaginaceae*). Monocots. (Helobieae). 4 gen., 12 sp. temp. Perenn. marsh herbs of grass-like habit; squamulae intravaginales (cf. Potamogetonaceae) in axils of sheathing l. Fls. ♂ or ♀ in racemes or spikes, reg., greenish, wind-fert., protog. P 3 + 3, homochlam., A 3 + 3, extr., G 3 + 3 sometimes united, but the outer whorl often abortive; stigmas sessile; 1 anatr. ov. in each cpl. Achene or schizocarp; exalbum.; embryo straight. Chief genera: Triglochin, Scheuchzeria, Lilaea.
- Schickendantzia** Pax. Amaryllidaceae (III). 2 Argentina.
- Schickendantziella** Spegazzini. Liliaceae (inc. sed.). 1 Argentina.
- Schieckia** Karst. (*Celastrus* p.p. *EP.*). Celastraceae. 1 trop. S. Am.
- Schiedia** Cham. et Schlecht. Caryophyllaceae (I. 1). 11 Hawaiian Is.
- Schiedeophytum** H. Wolff. Umbelliferae (III. 4). 1 Mexico.
- Schiekia** Meissn. Haemodoraceae. 1 warm S. Am.
- Schilleria** Kunth = *Piper* L. p.p. (Pip.).
- Schima** Reinw. ex Blume. Theaceae. 10 E. Indomal. *S. Wallichii* Choisy good timber.
- Schimmelia** Holmes (*Amyris* p.p.). Rutaceae (IV). 1 W.I.
- Schimpera** Hochst. Cruciferae (2). 2 E. Medit.
- Schindleria** H. Walter (*Villanilla* p.p.). Phytolacc. 5 Peru, Bolivia.
- Schinnongia** Schrank. Iridaceae (inc. sed.). 1 S. Afr.
- Schinopsis** Engl. (*Quebrachia* *BH.*). Anacardiaceae (3). 5 S. Am. The wood (quebracho) is hard and rich in tannin; used for tanning.
- Schinus** L. Anacardiaceae (3). 12 Mex. to Argent. *S. Molle* L. yields American mastic (resin); cult. for shade, &c. (pepper-tree).
- Schinziella** Gilg (*Canscora* p.p.). Gentianaceae (1). 2 trop. W. Afr.
- Schismatoclaea** Baker. Rubiaceae (I. 5). 4 Madag.
- Schismatoglottis** Zoll. et Mor. Araceae (V). 75 Malaya. At top of spadix, above the ♂ fls., are sterile fls. consisting of stds.
- Schismus** Beauv. Gramineae (10). 5 S. Afr., Medit.
- Schistocarpaea** F. Muell. Rhamnaceae. 1 Austr.
- Schistocarpa** Less. Compositae (8). 6 Mexico to Peru.
- Schistocaryum** Franch. Boraginaceae (IV. 2). 1 Yunnan.
- Schistogyne** Hook. et Arn. Asclepiadaceae (II. 1). 4 S. Am.
- Schistonema** Schlechter. Asclepiadaceae (II. 1). 1 Peru.
- Schistostephium** Less. Compositae (7). 6 S.E. Afr.
- Schistostigma** Lauterb. Euphorbiaceae (A. II. 5). 1 New Guinea.

- Schivereckia** Andr. ex DC. (*Alyssum* p.p. *BH.*). Crucif. (4). 2 E. Medit.
- Schizachne** Hack. Gramineae (10). 1 Saghalien.
- Schizachyrium** Nees (*Andropogon* p.p.). Gramineae (2). 8 N. Am.
- Schizaea** Sm. Schizaeaceae. 25 trop. and subtrop. Sporangia in a double row on lower surface of each of the reduced fertile pinnae.
- Schizaeaceae**. Filicales Leptosporangiatae. 5 gen., 70 sp., chiefly trop. Am.; a few subtrop. or temp., mostly small ferns with but little stem. *Lygodium* is a curious leaf-climber. As in *Osmunda*, the sporangia are borne (exc. in *Mohria*) on special pinnae of the leaf, distinct from the ordinary veg. pinnae. The sporangia are sessile, usu. without indusium; at the apex is a cap-like annulus, and the sporangium dehisces longitudinally.
- Chief genera: *Schizaea*, *Aneimia*, *Lygodium*, *Mohria*.
- Schizandra** Michx. Magnoliaceae. 7 trop. and warm temp. As., N. Am. Climbing shrubs with exstip. l. and spiral fls.
- Schizanthus** Ruiz et Pav. Solanaceae (5). 15 Chili. Fl. †; stalk curved, and the two really upper petals form the lower lip which is 3—4-lobed, while the lat. petals are 4-lobed and the lowest petal forms the simple or slightly 2-lobed upper lip. Sta. 4, 2 fertile and 2 staminodial. Fl. like the papilionate Leguminosae (*cf.* *Collinsia*), and fert. in a similar way, usu. by an explosive movement (*cf.* *Genista*).
- Schizeilema** Domin (*Pozoa* Hook. f.). Umbel. (1. 2). 12 N.Z., Austr.
- Schizo-** (Gr. pref.), split-; **-carp**, a fr. that splits up, without opening of the cpls., into 1-seeded mericarps, *Euphorb.*, *Geran.*, *Malpigh.*, *Malv.*, *Sapind.*, *Tropaeol.*, *Umbellif.*; **-genous**, formed by splitting.
- Schizobasis** Baker. Liliaceae (III). 5 S. Afr.
- Schizocalyx** Wedd. Rubiaceae (1. 5). 1 Colombia.
- Schizocapsa** Hance. Taccaceae. 1 S. E. China.
- Schizocarpum** Schrad. Cucurbitaceae (3). 4 Mexico.
- Schizocasia** Schott. Araceae (VI). 2 Phil. Is., New Guinea.
- Schizochilus** Sond. Orchidaceae (II. 1). 4 Cape Colony.
- Schizochlaena** Thou. Chlaenaceae. 5 Madag.
- Schizocodon** Sieb. et Zucc. Diapensiaceae. 2 Japan.
- Schizodium** Lindl. (*Disa* p.p. *BH.*). Orchidaceae (II. 1). 10 S. Afr.
- Schizoglossum** E. Mey. Asclepiadaceae (II. 1). 50 trop. and S. Afr.
- Schizolaena** Thou. Chlaenaceae. 5 Madag.
- Schizolepis** Schrad. ex Nees = *Scleria* Berg. (Cyper.).
- Schizolobium** Vog. Leguminosae (II. 7). 1 S. Brazil.
- Schizoloma** Gaudich. Polypodiaceae. 15 trop. and subtrop.
- Schizomeria** D. Don. Cunoniaceae. 1 E. Austr.
- Schizomeryta** R. Viguier (*Meryta* p.p.). Aral. (I). 1 New Caled.
- Schizonepeta** Briq. (*Nepeta* p.p.). Labiatae (VI). 4 temp. As.
- Schizonotus** A. Gray. Asclepiadaceae (II. 1). 1 California.
- Schizopepon** Maxim. Cucurbitaceae (2). 1 China, Japan.
- Schizopetalon** Sims. Cruciferae (3). 5 Chili.
- Schizophragma** Sieb. et Zucc. Saxifragaceae (III). 1 Japan.
- Schizopremna** Baill. Verbenaceae (4). 1 Timor.
- Schizoptera** Turcz. Compositae (5). 2 Ecuador, Mexico.
- Schizoscyphus** (*Schizosiphon*) K. Schum. Legum. (II. 2). 1 N. Guin.
- Schizostachyum** Nees. Gramineae (13). 10 E. As.

- Schizostephanus** Hochst. (*Vincetoxicum* p.p. *BH.*). Asclepiadaceae (II. i). 1 E. Afr.
- Schizostigma** Arn. Rubiaceae (I. 7). 1 Ceylon. Ovary 5—7-loc.
- Schizostylis** Backh. et Harv. Iridaceae (III). 2 S. Afr. *S. coccinea* Backh. et Harv. often cult. for its handsome fls.
- Schizotrichia** Benth. Compositae (6). 1 Peru.
- Schizozygia** Baill. Apocynaceae (I. 3). 1 Zanzibar.
- Schkuhria** Roth. Compositae (6). 11 W. Am.
- Schlechtendalia** Less. Compositae (12). 1 Brazil. A plant of very unusual habit (for this fam.), and with peculiar anatomy.
- Schlechterella** K. Schum. Asclepiadaceae (I). 1 E. Afr.
- Schlechteria** Bolus. Cruciferae (4). 1 W. Cape Colony.
- Schlechterina** Harms. Passifloraceae. 1 S. Afr.
- Schlegelia** Miq. Bignoniaceae (4). 3 W.I., Guiana.
- Schleichera** Willd. Sapindaceae (I). 1 trop. As., *S. trijuga* Willd. (Ceylon oak). Useful timber; aril of seed ed.; oil expressed from seed itself. Furnishes the best lac (Mirzapore lac).
- Schleidenia** Endl. = *Heliotropium* Tourn. (Borag.).
- Schleinitzia** Warb. (*Piptadenia* p.p. *EP.*). Legum. (I. 5). 1 N.G.
- Schleropelta** Buckley = *Hilaria* H. B. et K. p.p. (1 N. Am.).
- Schlimmia** Planch. et Linden. Orchidaceae (II. 13). 2 Colombia.
- Schlumbergeria** E. Morr. Bromeliaceae (I). 3 S. Am.
- Schmalhausenia** C. Winkler. Compositae (11). 1 C. As.
- Schmalzia** Desv. (*Rhus* p.p.). Anacardiaceae (3). 50 N. Am.
- Schmidelia** L. Sapindaceae (I). 55 S. Afr. and trop.
- Schmidtia** Steud. Gramineae (10). 2 Afr.
- Schnella** Raddi = *Bauhinia* L. p.p. (Legum.).
- Schoberia** C. A. Mey. = *Suaeda* Forst. p.p. (Chenop.).
- Schoenefeldia** Kunth. Gramineae (11). 4 trop. Afr. and As.
- Schoenia** Steetz. Compositae (4). 1 temp. Austr.
- Schoenolandia** Cornu. Pontederiaceae. 1 trop. Afr.
- Schoenobiblus** Mart. Thymelaeaceae. 3 trop. S. Am., W.I.
- Schoenocaulon** A. Gray. Liliaceae (I). 6 Am. Veratrin from seeds.
- Schoenocephalum** Seub. Rapateaceae. 2 N. Brazil.
- Schoenocrambe** Greene (*Sisymbrium* p.p.). Cruciferae (2). 3 N. Am.
- Schoenodendron** Engl. Cyperaceae (inc. sed.). 1 Cameroons. Tree.
- Schoenolaena** Bunge (*Xanthosia* *BH.*). Umbelliferae (I. 1). 2 W. Austr.
- Schoenolirion** Durand. Liliaceae (III). 4 N. Am.
- Schoenorchis** Reinw. Orchidaceae (II. 20). 1 Java.
- Schoenoxiphium** Nees. Cyperaceae (III). 2 S. Afr.
- Schoenus** L. Cyperaceae (II). 70 Austr., N.Z., a few in Malaya, Am., Eur.; *S. nigricans* L. in Brit.
- Schoepfia** Schreb. Olacaceae. 15 trop.
- Schoepfianthus** Engl. ex De Wild. Olacaceae. 1 trop. Afr. Nomen.
- Schollera** Roth = *Vaccinium* L. p.p. (Eric.).
- Scholtzia** Schau. (*Baeckea* p.p. *EP.*). Myrtaceae (II. 1). 12 Austr.
- Schombocattleya**, **Schombolaelia**, **Schombolaeliocattleya**, **Schomburgkiocattleya** Hort. Orchidaceae. Hybrids of *Schomburgkia*.
- Schomburgkia** Lindl. Orchidaceae (II. 6). 12 trop. Am. Cult.
- Schotia** Jacq. (*Theodora* Medic.). Legum. (II. 3). 6 trop. and S. Afr.

- Schoutenia** Korth. Tiliaceae. 5 trop. E. As.
Schouwia DC. Cruciferae (2). 2 Arabia, N. Afr.
Schradera Vahl. Rubiaceae (I. 7). 5 W.I. to Amazon.
Schrankia Willd. Leguminosae (I. 3). 7 warm Am.
Schrebera Roxb. (*Nathusia* Hochst.). Oleaceae. 6 Afr., India.
Schrebera Thunb. (*Hartogia* L. f.). Celastraceae. 2 S. Afr., Madag.
Schrenkia Regel et Schmalh. Umbelliferae (III. 3). 5 N. As.
Schstschurowskia Schrenk. Umbelliferae (inc. sed.). 1 Kokania.
Schubea Pax. Euphorbiaceae (A. II. 2). 1 Cameroons.
Schubertia Mart. (*Araujia* B.H.). Asclepiadaceae (II. 1). 6 S. Am.
Schultesia Mart. Gentianaceae (I). 18 trop. Am., Afr.
Schultzia Spreng. Umbelliferae (III. 5). 4 C. As., W. India.
Schumacheria Vahl. Dilleniaceae. 3 Ceylon.
Schumannia Kuntze (*Ferula* p.p.). Umbellif. (III. 6). 1 Turkestan.
Schumannianthus Gagnep. (*Phrynium* p.p.) Marantaceae. 1 S.E. As.
Schumanniphyton Harms (*Tetrastigma* p.p.). Rubi. (I. 8). 1 W. Afr.
Schuermansia Blume. Ochnaceae (Viol. B.H.). 5 Malay Archipelago.
Schuermansiella H. Hallier (*Schuermansia* p.p.). Ochn. 1 Borneo.
Schwabea Endl. Acanthaceae (IV. B). 5 Afr.
Schwackaea Cogn. Melastomaceae (I). 1 C. Am.
Schwalbea L. Scrophulariaceae (III. 3). 1 E. N. Am.
Schwannia Endl. Malpighiaceae (I). 6 Brazil.
Schwartzkopffia Kränzl. Orchidaceae (II. 1). 1 W. trop. Afr.
Schweiggeria Spreng. Violaceae. 1 Brazil.
Schweinfurthia A. Br. Scrophular. (II. 3). 3 E. Afr. to W. India.
Schweinitzia Ell. Pyrolaceae. 1 N. Am.
Schwendenera K. Schum. Rubiaceae (II. 10). 1 São Paulo.
Schwenkia L. Solanaceae (5). 20 trop. Am., Afr.
Schychowskyia Endl. (*Fleurya* p.p.). Urtic. (I). 1 palaeotrop.
Sciadodendron Griseb. Araliaceae (2). 1 C. Am.
Sciadonardus Steud. Gramineae (nomen). 1 N. Am.
Sciadopanax Seem. (*Panax* p.p. B.H.). Araliaceae (1). 1 Madag.
Sciadophyllum P. Br. (*Schefflera* p.p. EP.). Arali. (1). 25 trop. Am.
Sciadopitys Sieb. et Zucc. Coniferae (Pinaceae 22; see C. for gen. char.). 1 Japan, *S. verticillata* Sieb. et Zucc., the parasol-pine or umbrella-fir, planted round temples. Short shoots crowded together at ends of annual long shoots. Each like *Pinus* except that the two green needle-l. are 'fused' into a single needle grooved down the centre, so that at first glance they seem to be whorls of ordinary l. at the tip of each year's growth. The cones take two years to ripen. The wood is useful.
Sciadotenia Miers. Menispermaceae. 10 trop. S. Am.
Sciaphila Blume. Triuridaceae. 10 trop. Cf. *Flora*, 101, p. 395.
Scilla L. Liliaceae (V). 100 temp. |*. *S. festalis* Salisb. (*S. nutans* Sm.), wild hyacinth or English bluebell, in Brit. Bulbs with racemes.
Scillopsis Lem. = *Lachenalia* Jacq. p.p. (Lili.).
Scindapsus Schott. Araceae (II). 20 Indomal.
Scion, young shoot, twig used for grafting.
Sciophytium (Cl.), a shade formation.

Scirpodendron Zippel. Cyperaceae (11). 2 Indomal.

Scirpus (Tourn.) L. Cyperaceae (1). 200 cosmop. char., of wet moors, bogs and marshes; 15 in Brit. Stem usu. erect and angular, bearing 3 ranks of l. reduced to sheaths, and performing assim. Its base often gives rise to creeping rhiz. or to shoots ending in tubers like potatoes. The racemose many-flowered spikelets are aggregated into a terminal tuft. Fl. ♂, with 6 P-scales in two whorls; in many sp. protog.; in all wind-pollinated. *S. lacustris* L., sometimes termed bulrush, is used for matting, chair-seats, &c.

Scitamineae. The 10th order (*EP.*) of Monocots. A fam. (*BH.*) in Epigynae, incl. Musaceae, Marantaceae, Cannaceae, and Zingibéraceae of Engler. The 6th order (Warming) of Monocots.

Scレア Tourn. ex Mill. = *Salvia* L. p.p. (Labi.).

Scler-, **Sclero-** (Gr. pref.), hard; **-caulous**, with dry hard stem; **-enchyma**, tissue with thick hard walls; **-phyllous**, with thick hard l.; **-sis**, hardening by lignification; **-testa**, woody layer of seed coat.

Sclerachne R. Br. Gramineae (1). 1 Java.

Scleranthaceae or Illecebraceae. See Caryophyllaceae.

Scleranthus L. Caryophyllaceae (1. 6). 10 Eur., As., Afr., Austr.; *S. annuus* L. (knewel), &c. in Brit. Fls. apet., self-fert.

Scleria Berg. Cyperaceae (11). 100 trop.

Sclerocalyx Nees (*Gymnacanthus EP.*). Acanthaceae (IV. A). 1 Mexico.

Sclerocarpus Jacq. Compositae (5). 7 Texas, C. Am., trop. Afr.

Sclerocarya Hochst. Anacardiaceae (2). 3 trop. Afr. Ed. fr.

Sclerocephalus Boiss. Caryophyll. (1. 4). 1 Medit., a char. plant.

Sclerochiton Harv. Acanthaceae (IV. B). 5 Afr.

Sclerochlaena Baill. Chlaenaceae. 1 Madag.

Sclerochloa Beauv. Gramineae (10). 1 Eur., As.

Sclerochorton Boiss. Umbelliferae (III. 5). 2 W. As.

Sclerodactylon Stapf. Gramineae (10). 1 Madag.

Sclerodictyon Pierre. Apocynaceae (1. 1). 1 Gaboon.

Sclerolaena R. Br. (*Bassia* p.p. *EP.*). Chenopodiaceae (A). 6 Austr.

Sclerolepis Cass. Compositae (2). 1 W. U.S.

Sclerolobium Vog. Leguminosae (II. 8). 15 Brazil, Guiana.

Scleromelum K. Schum. et Lauterb. Santalaceae. 1 New Guinea.

Scleromitron Wight et Arn. = *Hedyotis* L. (*BH.*) = *Oldenlandia* L.

Scleronema Benth. (*Catostemma BH.*). Bombacaceae. 1 Brazil, Ecuador.

Scleroolaena Baill. (*Xylochlaena EP.*). Chlaenaceae. 1 Madag.

Sclerophylax Miers. Solanaceae (4). 4 Argentina.

Scleropoa Griseb. (*Festuca* p.p. *BH.*). Gramineae (10). 2 Medit.

Scleropogon Phil. Gramineae (10). 3 Chili, Mexico, Texas.

Scleropyrum Arn. Santalaceae. 2 Indomal.

Sclerosia Klotzsch. Ochnaceae (nomen). 1 Guiana.

Sclerosperma G. Mann et H. Wendl. Palmae (IV. 1). 1 W. trop. Afr.

Sclerostylis Blume = *Atalantia* Correa (Rut.).

Sclerotheca A. DC. Campanulaceae (III). 2 Society Is.

Sclerothrix C. Presl. Loasaceae. 1 Mexico to Brazil and Peru.

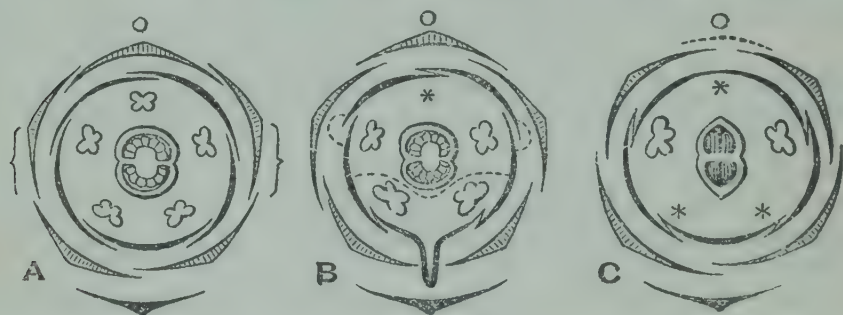
Scobedia Labill. ex Steud. Labiatae (nomen). 1, habitat?

Scoke (Am.), *Phytolacca*.

- Scoliopus** Torr. Liliaceae (VII). 2 W. N. Am.
Scoliotheca Baill. Gesneriaceae (2). 1 Colombia.
Scolochloa Link (*Grapphephorum* BH.). Gramineae (10). 2 N. temp.
Scolopendrium Adans. = *Phyllitis* Ludwig (Polypod.). *S. vulgare* Sm. (hart's tongue fern, Brit.) = *P. Scolopendrium*.
Scolopia Schreb. Flacourtiaceae (5). 18 warm [*]; *S. Afr.* sp. timber.
Scolosanthes Vahl. Rubiaceae (II. 3). 6 W. I.
Scolymus Tourn. ex L. Compositae (13). 3 Medit.
Scoparia L. Scrophulariaceae (III. 1). 10 trop. Am.
Scopolia Jacq. Solanaceae (2). 4 Eur., As.
Scopularia Lindl. (*Holothrix* BH.). Orchidaceae (II. 1). 1 Cape Col.
Scopulophila M. E. Jones. Caryophyllaceae (1. b). 1 W. U. S.
Scorodendron Blume (*Lepisanthes* p.p. EP.). Sapindaceae (1). 1 Timor.
Scorodocarpus Becc. Olacaceae. 1 Borneo.
Scorodonia Adans. = *Teucrium* L. p.p. (Labi.).
Scorodophloeus Harms. Leguminosae (II. 2). 1 Cameroons.
Scorpaena Nor. Inc. sed. Nomen.
Scorpioid, infl. with fls. in 2 ranks, coiled like a scorpion's tail, *Boraginaceae*.
Scorpion grass, *Myosotis*.
Scorpiurus L. Legumin. (III. 7). 6 Medit. Pod twisted, indeh.
Scortechinia Hook. f. Euphorbiaceae (inc. sed.). 4 Malaya.
Scorzonella Nutt. (*Microseris* p.p.). Compositae (13). 3 Calif.
Scorzonera (Tourn.) L. Compositae (13). 100 Medit., C. Eur. and As. Roots of *S. hispanica* L., &c. are eaten as vegetables.
Scotch attorney (W. I.), *Clusia*; - **fir**, *Pinus sylvestris* L.; - **grass** (W. I.), *Panicum molle* Sw.; - **tish asphodel**, *Tofieldia*.
Scottellia Oliv. Bixaceae. 3 trop. W. Afr.
Scouring rush (Am.), *Equisetum*.
Scratch coco (W. I.), *Colocasia antiquorum* Schott.
Screw pine, *Pandanaceae*, *Pandanus*; - **tree** (W. I.), *Helicteres*.
Scribneria Hackel (*Lepturus* p.p.). Gramineae (12). 1 Calif., Oregon.
Scrobiculatus (Lat.), pitted.
Scrofella Maxim. Scrophulariaceae (II. 4). 1 China.
Scrophularia Tourn. ex L. Scrophulariaceae (II. 4). 120 N. temp.; 3 in Brit., incl. *S. aquatica* L. and *S. nodosa* L., the fig-worts. Perenn. herbs with opp. l., which on the lat. twigs are commonly anisophyllous. Fls. in tall infls. whose primary branching is racemose; the lat. shoots are dichasial. Sta. and style arranged along the lower lip of the C (upper usual in such fls.). The posterior sta., usu. absent in the fam., is repres. by a std. Fl. markedly protog., largely visited by wasps.
Scrophulariaceae (EP., BH. unite II. 7 to *Globulariaceae* to form fam. *Selaginaceae*). Dicots. (Sympet. Tubiflorae; Personales BH.). 200 gen., 2600 sp., cosmop. Most are herbs and undershrubs, a few shrubs or trees (e.g. *Paulownia*), with alt., opp., or whorled exstip. l. Many exhibit interesting features in the veg. organs. Several are climbers (e.g. *Maurandia*, *Rhodochiton*, &c.). The *Veronicas* of N. Z. are xero. with resemblance in habit to certain *Coniferae*. A

number of sp. in III. 2 and 3 (below), *e.g.* Euphrasia, Bartsia, Pedicularis, grow in swampy grass-land and are parasitic by their roots upon the roots of the grasses. Suckers are formed at the points of contact, in spring; they absorb food till the summer, and later absorb organic compounds from the dead parts of the host, and function for storage of reserve-materials. The plants possess green l. of their own, and so are able to assimilate.

Infl. racemose or cymose, in the former case usu. a spike or raceme, axillary or term. (every variety in sp. of Veronica). Sol.



Floral diagrams of A, *Verbascum nigrum*, B, *Linaria vulgaris*, C, *Veronica chamaedrys*; after Eichler.

axillary fls. in many, *e.g.* Linaria. Cymose infls. usu. dichasia, often united into complex corymbs, &c. Bracts and bracteoles usu. present. In Castilleja the upper l. and bracts brightly coloured.

Fl. ♀, ♂, sometimes nearly reg. (*Verbascum*, &c.); considerable variety in structure, as illustrated by the floral diagrams given. The bulk of the fam. show the *Linaria* type. K (5), of various aestivations; C (5), median ♂, often 2-lipped; A₄ (sometimes 2), didynamous, epipet., the post. sta. sometimes repres. by a std. (*e.g.* in *Scrophularia* and *Pentstemon*). *Verbascum* and its allies have an actinom. C and 5 sta.; *Veronica* (*q.v.*) shows 4 sepals (the post. one of the typical 5 absent), 4 petals (the post. pair of the 5 united), and 2 sta., the C. rotate. Other variations occur in the *Selaginiae*, &c. Below the ovary is a honey-secreting disc. $\bar{G}$ (2), medianly placed (not obliquely as in *Solanaceae*), 2-loc., with axile plac.; ov. usu. ∞ , less commonly few (*e.g.* *Veronica*, &c.), anatrop.; style simple or bilobed. Fr. surrounded below by the persistent K, usu. a capsule (dehisc. in various ways) or a berry. Seeds usu. numerous, small, with endosp. Embryo straight or slightly curved.

Most have fls. $\pm$ adapted to insect-visits. Müller divides them into 4 types: (1) the *Verbascum* or *Veronica* type (see gen.) with open fl. and short tube (bees and flies), (2) the *Scrophularia* type (wasps), (3) the *Digitalis* and *Linaria* type with long wide tubes and the essential organs so placed as to touch the back of the insect (bees), and (4) the *Euphrasia* type or 'loose-pollen' fl., where the pollen is loose and powdery, and the anthers (protected by upper lip) have spines, &c., so that they may be shaken upon the entrance of the insect, which thus receives a shower of pollen. The fls. are seldom markedly dichogamous, but the stigma usu. projects beyond the sta.

so as to be first touched. Most are capable of self-fert. in default of visits. For further details see gen.

In *Linaria*, &c. (*q.v.*) there sometimes appears a terminal fl. to the raceme, and this exhibits *peloria*, having a symmetrical C with spurs to all the petals (*cf.* *Ruta*, or compare *Aquilegia* with *Delphinium*).

A number are or have been officinal, *e.g.* *Digitalis*; most are poisonous. Many favourite cult. orn. plants, *e.g.* *Calceolaria*, *Mimulus*, *Pentstemon*, *Antirrhinum*, *Linaria*, *Veronica*, *Collinsia*, &c.

Classification and chief genera (after von Wettstein):

- A. Two post. C-teeth (or upper lip) cover lat. teeth in bud.
 - I. *PSEUDOSOLANEAE* (all l. usu. alt.; 5 sta. often present):
 - 1. *Verbasceae* (C with very short tube or none, rotate or shortly campanulate): *Verbascum*, *Celsia*.
 - 2. *Aptosimeae* (C with long tube): *Aptosimum*.
 - II. *ANTIRRHINOIDEAE* (lower l. at least opp.; the 5th sta. wanting or staminodial):
 - a. C 2-lipped; lower lip concave, bladder-like.
 - 1. *Calceolarieae*: *Calceolaria*.
 - β. C almost actinom., or 2-lipped with flat or convex lips.
 - 2. *Hemimerideae* (dehisc. caps.; C spurred or saccate at base, with no tube): *Alonsoa*.
 - 3. *Antirrhineae* (as 1, but with tube): *Linaria*, *Antirrhinum*, *Maurandia*, *Rhodochiton*.
 - 4. *Cheloneae* (dehisc. caps. or many-seeded berry; C not spurred or saccate; infl. cymose, cpd.): *Russelia*, *Wightia*, *Collinsia*, *Scrophularia*, *Chelone*, *Pentstemon*, *Paulownia*.
 - 5. *Manuleae* (dehisc. caps.; C as in 4; infl. not cymose; usu. simple; anthers finally 1-loc.): *Zaluzianskia*, *Lyperia*.
 - 6. *Gratiolaeae* (as 5, but anthers finally 2-loc.): *Mimulus*, *Gratiola*, *Torenia*.
 - 7. *Selagineae* (drupe or indeh. few-seeded caps.): *Hebenstretia*, *Selago*.
 - B. Two post. teeth (or upper lip) of C covered in bud by one or both of the lat. teeth.
- III. *RHINANTHOIDEAE*.
 - a. C-teeth all flat and divergent, or the 2 upper erect.
 - 1. *Digitaleae* (anther-loc. finally united at tip; 2 upper C-lobes often erect; not paras.): *Veronica*, *Digitalis*.
 - 2. *Gerardiaceae* (anther-loc. always separate, one often reduced; C-lobes all flat, divergent; often paras.): *Gerardia*.
 - b. 2 upper C-teeth form a helmet-like upper lip. Often paras.
 - 3. *Rhinanthaeae*: *Castilleja*, *Melampyrum*, *Tozzia*, *Euphrasia*, *Bartsia*, *Pedicularis*, *Rhinanthus*.

Scrophularineae (BH.) = *Scrophulariaceae*.

Scrub, *cf.* *Acacia*; -*myrtle* (Austr.), *Backhousia*.

Scubalia Nor. Inc. sed. Nomen.

Scurrula L. = *Loranthus* L. (Lor.).

Scurvy grass, *Cochlearia officinalis* L.

Scutachne Hitchc. et Chase. *Grainineae* (5). 2 Cuba.

Scutate, *scutiform*, buckler-shaped.

Scutch grass (Am.), *Cynodon Dactylon* Pers.

- Scutellaria** Riv. ex L. Labiatae (1V). 200 cosmop. exc. S. Afr. 2 in Brit., *S. galericulata* L. and *S. minor* Huds. (skull-cap).
- Scutellum**, *Gramineae*.
- Scutia** Comm. ex Brongn. Rhamnaceae. 3 S. Afr., trop.
- Scuticaria** Lindl. Orchidaceae (II. 18). 2 trop. S. Am. Epiphytes, with no tubers, but long pendulous fleshy cylindrical stems. Cult. orn. fl.
- Scutinanthe** Thw. (*Canarium* p.p. BH.). Burseraceae. 1 Ceylon.
- Scybalium** Schott et Endl. Balanophoraceae. 4 trop. Am., W.I.
- Scyphanthus** D. Don (*Grammatocarpus* BH.). Loasaceae. 2 Chili.
- Scypharia** Miers (*Colletia* BH.). Rhamnaceae. 4 W. trop. Am.
- Scyphellandra** Thw. (*Alsodeia* p.p. BH.). Violaceae. 1 Ceylon.
- Scyphiphora** Gaertn. f. Rubiaceae (I. 8). 1 Indomal.
- Scyphiphorous**, cup-bearing.
- Scyphocephalum** Warb. Myristicaceae. 6 trop. W. Afr.
- Scyphochlamys** Balf. f. Rubiaceae (II. 1). 1 Rodrigues.
- Scyphocoronis** A. Gray. Compositae (4). 1 W. Austr.
- Scyphogyne** Brongn. Ericaceae (IV. 2). 10 S. Afr.
- Scyphonychium** Radlk. (*Cupania* p.p.). Sapind. (I). 1 N.E. Brazil.
- Scytopetalum** Hiern (*Paranephelium* p.p. EP.). Sapind. (I). 1 Burma.
- Scyphostachys** Thw. Rubiaceae (I. 8). 2 Ceylon.
- Scyphostegia** Stapf. Monimiaceae (??). 1 Borneo.
- Scyphostelma** Baill. Asclepiadaceae (II. 1). 1 Colombia.
- Scyphostrychnos** Sp. Moore. Loganiaceae. 1 Nigeria.
- Scyphosyce** Baill. Moraceae (II). 2 trop. W. Afr.
- Scytalia** Gaertn. = *Nephelium* L. (Sapind.).
- Scytanthus** T. Anders. (*Thomandersia* EP.). Acanth. (IV. B). 1 W. Afr.
- Scytanthus** Liebm. (*Cytinus* p.p. BH.). Rafflesiaceae. 4 Mexico.
- Scytometalaceae** (EP.). Dicots. (Archichl. Malvales). Only gen. *Scytometalum*, *q.v.*
- Scytometalum** Pierre. Scytometalaceae. 10 trop. W. Afr. Trees or shrubs with alt. leathery l. and long-stalked fls. K dish-like, C 3—7, valvate, A ∞ , G (4—6), each with 2—6 pend. ov. Fr. woody or drupaceous, 1-seeded.
- Sea bean**, *Entada scandens* Benth.; - **beet**, *Beta vulgaris* L.; - **blite**, *Suaeda maritima* Dum.; - **coast and salt-steppe pl.**, cf. Halophytes; - **buckthorn**, *Hippophaë rhamnoides* L.; - **grape**, *Coccoloba uvifera* L. &c.; - **heath**, *Frankenia*; - **holly**, *Eryngium*; - **Island cotton**, *Gossypium barbadense* L.; - **kale**, *Crambe maritima* L.; - **lavender**, *Statice*; - **milkwort**, *Glaux maritima* L.; - **pink**, *Armeria vulgaris* Willd.; - **purslane**, *Arenaria peploides* L.; - **side grape**, *Coccoloba*; - **rocket**, *Cakile maritima* Scop.
- Seaforthia** R. Br. = *Ptychosperma* Labill. (Palm.).
- Sebaceus** (Lat.), like lumps of tallow.
- Sebaea** Soland. ex R. Br. Gentianaceae (I). 100 warm !*
- Sebastiania** Spreng. Euphorbiaceae (A. II. 7). 45 trop., U.S.
- Sebastiano-Schaueria** Nees. Acanthaceae (IV. B). 1 Brazil.
- Sebertia** Pierre. Sapotaceae (II). 1 New Caledonia.
- Sebestens**, fr. of *Cordia Myxa* L.

Sebicea Pierre ex Diels = *Tiliacora* Colebr. (Menisp.).

Sebizia Mart. Vitaceae. Nomen.

Secale (Tourn.) L. Gramineae (12). 2 Medit., Eur., As. *S. cereale* L., the rye, is largely cult. in N. Eur. as a cereal, forming a staple food. There are no well-marked races. The hardy winter ryes are the best. Also used as fodder.

Secamone K. Br. Asclepiadaceae (11. 2). 60 palaeotrop.

Secamonopsis Jumelle. Asclepiadaceae (11. 2). 1 Madag.

Sechiopsis Naud. Cucurbitaceae (4). 1 Mexico.

Sechium P. Br. Cucurbitaceae (4). 1 trop. Am., *S. edule* Sw., cult. for its ed. fr. (chocho), containing one enormous seed.

Secondary shoots, adv. shoots when primaries occur, *Ailanthus*, *Anthurium*, *Podostemaceae*, *Testudinaria*, *Tristichaceae*.

Secondatia A. DC. Apocynaceae (11. 1). 5 trop. S. Am.

Secretaria Muell.-Arg. (*Hyeronyma* BH.). Euph. (A. 1. 1). 1 Gui.-sect, divided to the base.

Secula Small. Leguminosae (111. 7). 1 W.I., Florida.

Secund, all directed to the one side.

Secundine, inner coat of ovule.

Securidaca L. Polygalaceae. 32 trop., exc. Austr. Climbers.

Securigera DC. (*Bonaveria* Scop.). Leguminosae (111. 5). 1 Medit.

Securinea Comm. ex Juss. Euphorb. (A. 1. 1). 10 temp. and sub-trop.

Sedastrum Rose. Crassulaceae. 7 Mexico.

Seddera Hochst (*Breweria* p.p.). Convolvulaceae (1). 6 palaeotrop.

Sedella Britton et Rose (*Sedum* p.p.). Crassulaceae. 2 Calif.

Sedge, *Carex*, *Cyperaceae*; **cotton-**, *Eriophorum*; **sword-**; *Lepidosperma*.

Sedum Tourn. ex L. Crassulaceae. 150 N. temp., 1 in Peru; 9 in Brit., incl. *S. Telephium* L. (orpine or livelong), *S. Rhodiola* DC. (rose-root), *S. anglicum* Huds. and *S. acre* L. (stonecrop or wall-pepper). Fleshy-leaved xero. Cult. orn. fl. and fol.

Seed, the product of the ovule after fert.; it contains the embryo, and if nothing else, is *exalbuminous*, but may contain reserve material outside the embryo (*albuminous*), which may be derived from the interior of the embryo-sac (*endosperm*), or from tissue outside this (*perisperm*). Usually mentioned after the fr. in descriptions. In form, &c. it may be large or small; spherical, ellipsoidal, &c.; anatr., amphitr., &c. like the original ovule. The testa may be smooth, or covered with small or large tubercles, papillae, granules, ribs, &c.; green, brown, or of other colours; thin or thick, woody (as in *Bertholletia*), with a fleshy outer layer (as in *Bixa*, *Cycas*, *Magnolia*, *Moraea*, &c.), hooked or winged (see below), or provided with hairs. It is usu. firm and tough, allowing very little evap. of water from the seed. Its outer cells sometimes have mucilaginous walls and swell when wetted, as in *Brassica*, *Collomia*, *Linum*, *Plantago*, &c.; sometimes there are scales or hairs upon it and these swell, as in many *Acanthaceae*. The testa is usu. marked with a scar, the *hilum*, where the stalk separated from the seed.

Many are covered by an extra coat (*aril*) that is developed like the original integuments, *i.e.* by a cup-like growth of tissue around the seed from the top of the stalk or rarely from the micropyle. Its

development may be studied in fr. of *Euonymus*. Arillate seeds in *Celastraceae*, *Commelinaceae*, &c., *Dilleniaceae*, *Myristica*, *Nymphaeaceae*, *Passiflora*, *Sapindaceae*, *Taxus*, &c. In *Euphorbiaceae* the aril remains small and hard and is called a *caruncle*, but usu. it is fleshy.

The endosp. may be *starchy*, *farinaceous*, *floury*, or *mealy* (the cells containing starch and when powdered forming a floury dust) as in *Triticum*, *oily* as in *Papaver*, *Ricinus*, &c., *fleshy* as in *Berberis*, *horny* as in *Coffea*, *bony* as in *Phoenix* and *Phytelephas*, *ruminate* (marked by wavy transverse lines which give it a marbled look) as in *Anonaceae*, *mucilaginous*, &c.

The embryo (rarely embryos) may be straight, curved, twisted, &c. (and cf. *Cruciferae*). It may have one, two, or several cotyledons (important in classification), or rarely none, as in *Cuscuta*, &c.

Mention must be made of *adventitious* embryos of *Alchornea*, *Funkia*, *Nothoscordum*, &c., and of the peculiar cases of *Ginkgo*, and *Gnetum*, where the seed 'ripens' before fertilisation.

Seemannaralia R. Viguier. *Araliaceae* (1). 1 S. Afr.

Seemannia Regel. *Gesneriaceae* (11). 5 Peru, Bolivia.

Seetzenia R. Br. *Zygophyllaceae*. 1 Afr., As., in deserts.

Segetalis (Lat.), growing in grain fields.

Segments, the free portions of a concrescent K or C.

Segregate, kept separate.

Seguieria Loeffl. *Phytolaccaceae*. 25 S. Am. L. leathery; stipules thorny. Powerful odour of garlic. Cpl. 1. Fr. a samara.

Seidelia Baill. *Euphorbiaceae* (A. II. 2). 1 S. Afr.

Seidlitzia Bunge et Boiss. *Chenopodiaceae* (B). 1 Armenia, Persia.

Selagineae (B.H.). See *Scrophulariaceae* and *Globulariaceae*.

Selaginella Spring. The only genus of *Selaginellaceae*. 700 chiefly trop.; a few temp. e.g. *selaginoides* Link on boggy hill sides in Brit. Most live in damp places, esp. in forests, but a few xero. The embryo has a suspensor, and grows directly into the leafy plant which shows a habit very similar to *Lycopodium*—much-branched stem, often creeping, bearing roots on lower side and l. on upper, with term. cones of sporangia. L. spirally arranged as in most *Lycopodiums* (e.g. in *S. selaginoides*), or more commonly in 4 ranks, two outer ones of large, two inner ones of small l., thus giving the stem a dorsiventral structure. The roots in some, e.g. *S. Kraussiana* A. Br. and *S. Martensii* Spring, are borne on *rhizophores*, anomalous stem branches developed at the nodes and exhibiting a sort of intermediate structure between stem and root. The sporangia are placed at the bases of the l. in term. cones of radial symmetry. The mega-sporangia contain 4 large spores and can easily be distinguished by eye. On germ. a microspore produces a rudimentary ♂ prothallus bearing an antheridium. The megaspore forms a ♀ prothallus, which remains enclosed in the burst spore, and has an upper small-celled green portion and a lower large-celled storage portion as in *Salviniaceae*, &c.

S. lepidophylla Spring is a xero. which curls into a ball in the dry season, and may be rolled about by wind (cf. *Anastatica*).

Selaginellaceae. *Lycopodiales*. Only genus *Selaginella* (q.v.).

Selago L. *Scrophulariaceae* (II. 7). 140 S. and trop. Afr., Madag.

Selenia Nutt. *Cruciferae* (2). 2 S.W. U.S.

- Selenicereus** Britton et Rose (*Cereus* p.p.). Cactaceae (III. 1). 12 W.I., C. Am., Mexico.
- Selenipedium** Reichb. f. Orchidaceae (I. 2). 2 N. trop. S. Am. Ov. 3-loc.
- Selenocera** Zipp. ex Span. Rubiaceae (inc. sed.). 1 Timor.
- Self coloured**, of uniform tint; - **fertilisation**, from the pollen of the same fl., *Cephalanthera*, *Ophrys*, *Senecio*, many annuals, Cleistogamic fls., &c.; - **burying fl.**, *Trifolium*, *Trigonella*, fr., *Arachis*, *Voandzeia*, **seed**, *Erodium*; - **heal**, *Prunella*; - **sterility**, sterility to its own pollen, *Abutilon*, *Corydalis*.
- Selinocarpus** A. Gray. Nyctaginaceae. 4 S.W. U.S., Mexico.
- Selinum** L. Umbelliferae (III. 5). 16*.
- Selkirkia** Hemsl. Boraginaceae (IV. 1). 1 Juan Fernandez.
- Selleophytum** Urb. Compositae (5). 1 Haiti.
- Selliera** Cav. Goodeniaceae. 2 Austr., N.Z., temp. S. Am. Fr. indeh.
- Selliguea** Bory = Polypodium, L. (Polypod.).
- Selloa** H. B. et K. Compositae (5). 1 Mexico.
- Sellocharis** Taub. Leguminosae (III. 3). 1 S.E. Brazil.
- Selwynia** F. Muell. (*Cocculus* p.p. EP.). Menispermaceae. 1 Austr.
- Selsia** Cogn. Cucurbitaceae (2). 2 Brazil, Colombia.
- Semaphore plant**, *Desmodium gyrans* DC.
- Semecarpus** L. f. Anacardiaceae (4). 40 Indomal. The young fr. yields a black resin used as marking ink, &c.
- Semeiandra** Hook. et Arn. Onagraceae (2). 1 Mexico.
- Semele** Kunth. Liliaceae (VII). 1 Canaries, *S. androgyna* Kunth (*Ruscus androgynus* L.). A climbing shrub with leaf-like phylloclades in the axils of scale-l. Fls. in little cymes (cf. Asparagus) on edges of phylloclades. The new shoots rise from the soil, and grow long before the lat. branches, bearing the phylloclades, begin to unfold.
- Semenovia** Regel et Herder. Umbelliferae (inc. sed.). 1 C. As.
- Semiaquilegia** Makino (*Isopyrum* p.p.). Ranunc. (2). 1 Japan.
- Semibegoniella** C. DC. Begoniaceae. 2 Ecuador.
- Seminiferous**, seed-bearing.
- Semiramisia** Klotzsch (*Thibaudia* p.p. EP.). Eric. (III. 2). 2 S. Am.
- Semonvillea** J. Gay. Phytolaccaceae (*Aizo.* BH.). 2 S. and trop. Afr.
- Sempervirens** (Lat.), evergreen.
- Sempervivum** Rupp. ex L. Crassulaceae. 50 S. Eur., Himal., Abyss., &c. *S. tectorum* L. (houseleek, planted on cottages to keep slates in position) is a xero. with fleshy l. and veg. repr. by offsets.
- Senaea** Taub. Gentianaceae (1). 1 Minas Geraes.
- Senapea** Aubl. Inc. sed. 1 Guiana.
- Senebiera** DC. (*Coronopus* Rupp.). Cruciferae (2). 12 subtrop., Eur.; one nat. in Brit., *S. didyma* Pers.
- Senecio** (Tourn.) L. (incl. *Cineraria* L. p.p., *Kleinia* Haw., *Ligularia* Cass., &c.). Compositae (8). 1450 cosmop., 9 in Brit. (ragwort, groundsel, &c.). Shows § chars. well. The gen. includes pl. of most various habit. Some are climbers, e.g. *S. macroglossus* DC. (S. Afr.), which is remarkably like ivy. Many are xero. some with fleshy l., others with fleshy stems, others with hairy or inrolled l. (cf. *Empetrum*). The fls. of *S. vulgaris* L. (groundsel) are regularly self-fert. and are very inconspic.; there are no ray-florets. In *S.*

- Jacobaea* L. (rag-wort) there are ray-florets, and the conspic. fls. are largely visited by insects. The fleshy stems of *S. (K.) articulatus* Sch. Bip. (S. Afr.) separate at the joints and grow into new pl. *S. Johnstoni* Oliv. is a remarkable tree on Kilimandjaro.
- Senefeldera** Mart. Euphorbiaceae (A. II. 7). 4 Brazil.
- Senega snake root**, *Polygala Senega* L.
- Senkenbergia** Schau. (*Boerhaavia* p.p. *EP.*). Nyctagin. 3 N. Am.
- Senna** Tourn. ex Mill. = *Cassia* Tourn. p.p. (Legum.).
- Senna**, Alexandrian, Arabian, Italian, *Cassia*; **bladder-**, *Colutea*.
- Sennenia** Pau ex Sennen (*Trisetum* p.p.). Gramin. (9). 1 Eur.
- Senra** Cav. Malvaceae (4). 1 E. Afr., Arabia.
- Sensitive fern** (Am.), *Onoclea*; **-l. and petioles**, cf. Climbing Pl., Insectivorous Pl., Movements; **-plant**, *Mimosa pudica* L., *Neptunia*, &c.; **-sta.**, *Berberis*, *Centaurea* and many *Compositae*, *Portulaca*, *Sparmannia*; **-stigma**, *Martynia*, *Minulus*, *Strobilanthes*.
- Sepal**, cf. Perianth; **-oid** (P), all of sepal-like l.
- Sepalosiphon** Schlechter. Orchidaceae (II. a. III). 1 New Guinea.
- Septal**, of hedgerows.
- Septas** L. = *Crassula* Dill. p.p. (Crass.).
- Septate**, divided by a partition wall or walls.
- Septemfid**, in seven divisions.
- Septicidal**, **septifragal**, cf. Fruit.
- Septum**, a partition, e.g. in a multiloc. ovary.
- Sequoia** Endl. (*Washingtonia* Winsl., *Wellingtonia* Lindl.). Coniferae (Pinaceae 26; see C. for gen. char.). 2 N.W. Am. *S. gigantea* Lindl. et Gord. is the mammoth tree of Calif., discovered in the Sierra Nevada in 1850. The tallest is 320 feet, the thickest 35 feet (Sargent; cf. *Eucalyptus*); the age of the largest is about 1500 years. In some museums are sections of a tree cut down in 1882 and showing 1335 annual rings. *S. sempervirens* Endl., the redwood, is even taller, though not so thick (340 and 28 feet), and is valued for its timber, &c.
- Seradella**, **serratella**, *Ornithopus sativus* Brot.
- Seraphyta** Fisch. et Mey. Orchidaceae (II. 6). 1 W.I.
- Serapias** L. Orchidaceae (II. 1). 5 Medit.
- Serenoa** Hook. f. Palmae (I. 2). 1 S.E. U.S.
- Serial** (branches, buds) one above another at same node, cf. Bud.
- Serianthes** Benth. Leguminosae (I. 1). 5 trop. As., Polynesia.
- Sericeous**, silky.
- Sericocarpus** Nees. Compositae (3). 5 U.S.
- Sericocoma** Fenzl. Amarantaceae (2). 15 S. and trop. Afr.
- Sericocomopsis** Schinz. Amarantaceae (2). 4 E. trop. Afr.
- Sericodes** A. Gray. Zygophyllaceae. 1 Mexico.
- Sericographis** Nees = *Jacobinia* Moric. (Acanth.).
- Sericorema** Lopriore (*Sericocoma* p.p.). Amarant. (2). 2 Afr.
- Sericospora** Nees. Acanthaceae (inc. sed.). 1 Antilles.
- Sericostachys** Gilg et Lopriore. Amarant. (2). 2 C. and W. Afr.
- Sericostoma** Stocks. Boraginaceae (IV. 4). 3 E. Afr. to N.W. India.
- Sericotheca** Rafin. (*Spiraea* p.p.). Rosaceae (I. 1). 14 N. and C. Am.
- Seridia** Juss. = *Centaurea* L. p.p. (Comp.).
- Series**, cf. Nomenclature.

- Seringia** J. Gay. Sterculiaceae. 1 E. Austr., New Guinea.
- Serinia** Rafin. (*Krigia* BH.). Compositae (13). 3 S. U.S.
- Seriola** L. = *Hypochoeris* L. p.p. (Comp.).
- Seriphium** L. = *Stoebe* L. (Comp.).
- Seris** Less. Compositae (12). 3 campos of S. and E. Brazil.
- Serissa** Comm. ex Juss. Rubiaceae (11. 7). 1 China, Japan, cult. medicinal.
- Serjania** Plum. ex Schum. Sapindaceae (1). 175 warm Am. Lianes with watch-spring tendrils and stip. l. Fr. a 3-winged schizocarp.
- Serotinus** (Lat.), late in the season.
- Serpicula** L. Haloragidaceae. 3 trop. and sub trop. Land or marsh pl.
- Serrafalcus** Parl. = *Bromus* L. p.p. (Gramin.).
- Serrastylis** Rolfe (*Macradenia* p.p. EP.). Orchid. (11. 18). 1 Colombia.
- Serrate**, margin with small teeth pointing forward; cf. Leaf, Fig. B.
- Serratula** Dill. ex L. Compositae (11). 40 Eur. to Japan. *S. tinctoria* L. (saw-wort) in Brit. is dioec.
- Serresia** Montr. Inc. sed. 1 New Caled.
- Serruria** Salisb. Proteaceae (1). 50 S. Afr.
- Sersalisia** R. Br. (*Lucuma* p.p.). Sapotaceae (1). 6 trop. Afr.
- Sertifera** Lindl. Orchidaceae (11. 7). 2 Ecuador, Peru.
- Service berry**, *Amelanchier*.
- Sesame**, *Sesamum indicum* L.; -grass (Am.), *Tripsacum*.
- Sesamothamnus** Welw. Pedaliaceae. 5 trop. Afr.
- Sesamum** L. Pedaliaceae. 15 trop. Afr., As. *S. indicum* L. largely cult. in India, &c. for the oil from seeds (gingili, sesame, &c.).
- Sesban** (W.I.), *Sesbania*.
- Sesbania** Scop. Leguminosae (111. 6). 24 trop. and sub trop. *S. aculeata* Poir. is a marsh plant, giving off floating roots from the base of the stem, covered with spongy aerenchyma (cf. *Neptunia*).
- Seseli** L. Umbelliferae (111. 5). 60 Eur., Afr., As., Austr.; 1 Brit.
- Sesleria** Scop. Gramineae (10). 10 Eur., W. As.; 1 Brit.
- Sesqui-** (Lat. pref.), one and a half; -pedalis, 1½ feet.
- Sessea** Ruiz et Pav. Solanaceae (4). 5 Andes.
- Sessile**, without stalk.
- Sesuvium** L. Aizoaceae (11). 5 trop. and sub trop. Halophytes.
- Seta**, a bristle.
- Setaria** Beauv. Gramineae (5). 30 trop. and warm temp. *S. italica* Beauv. (Italian millet) is cult. as a cereal in As.
- Setariopsis** Scribner ex Millsp. (*Setaria* p.p.). Gramineae (5). 2 Mexico.
- Setchellanthus** T. S. Brandege. Capparidaceae (inc. sed.). 1 Mex.
- Setcreasea** K. Schum. et Sydow (*Treleasea* Rose). Commel. 4 N. Am.
- Sethia** H. B. et K. = *Erythroxylum* P. Br. p.p. (Erythr.).
- Setilobus** Baill. Bignoniaceae (1). 2 Brazil.
- Setiscapella** Barnhart (*Utricularia* p.p.). Lentib. 12 trop.
- Setouratea** Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 8 Brazil.
- Seville orange**, *Citrus Aurantium* L., var. *Bigaradia* or *amara*.
- Seven-year vine** (W.I.), *Ipomoea tuberosa* L.
- Sewerzowia** Regel et Schmalh. (*Astragalus* p.p. BH.). Leguminosae (111. 6). 1 Turkestan.
- Sex distribution**; sta. and cpls. in one ♀ fl., *monoclinous*, in separate ♂ and ♀ fls., *diclinous*; ♂ and ♀ fls. on same pl., *monoecious*, on separate pl.,

dioecious. *Gynomonoecism* (♂ and ♀ on same pl., as in some Compositae, Labiatae, &c.), *gynodioecism* (♂ and ♀ on separate pl., as in Nepeta, Thymus, and other Labiatae, Plantago, many Caryophyllaceae, &c.), *andromonoecism* (♂ and ♂ on one pl., as in Veratrum), *androdioecism* (♂ and ♂ on separate pl., as in Dryas), *trioecism* (♂, ♂, ♀, each on its own pl., as in Silene sp.), *polygamy* (♂, ♂, ♀, in various combinations on one or more pl., as in Rhus, Fraxinus, &c.).

Seychellaria Hemsl. Triuridaceae. 1 Seychelles.

Seymeria Pursh (*Afzelia* Gmel.). Scrophulari. (III. 2). 9 N. Am.

Shadbush (Am.), *Amelanchier*.

Shaddock, *Citrus decumana* Murr.

Shade trees for crops, *Cedrela*, *Erythrina*, *Grevillea*, *Michelia*, *Pithecolobium*, *Poinciana*, *Schinus*, &c.

Shafera Greenman. Compositae (8). 1 Cuba.

Shaferocharis Urb. Rubiaceae (II. 3). 1 Cuba.

Shallon, *Gaultheria Shallon* Pursh.

Shallot, *Allium ascalonicum* L.

Sham honey, *Cleome*, *Lopezia*, *Parnassia*.

Shamrock, *Trifolium repens* L.

Shave grass (Am.), *Equisetum hyemale* L.

Shawia Forst. = *Olearia* Moench p.p. (Comp.).

She oak, *Casuarina*.

Shea butter, *Butyrospermum Parkii* Kotschy.

Sheareria Sp. Moore. Compositae (5). 1 China.

Sheep berry (Am.), *Viburnum Lentago* L.; -bane (W.I.), *Hydrocotyle*; -sorrel, *Rumex*; **vegetable-**, *Raoulia*.

Shellac, *Ficus*, and cf. *Lac*.

Shepherd's purse, *Capsella Bursa-pastoris* Medic.

Shepherdia Nutt. (*Lepargyrea* EP.). Elaeagnaceae. 3 N. Am. Recept. fleshy in fr. Fr. of *S. argentea* Nutt. (buffalo-berry) ed.

Sherardia Dill. ex L. Rubiaceae (II. 11). 1 Eur. (incl. Brit.), W. As., N. Afr., *S. arvensis* L., the field madder.

Sherbournea G. Don (*Amaralia* EP.). Rubiaceae (I. 8). 5 trop.

Sherwoodia House (*Shortia* Torr. et Gray). Diapensi. 4 Chi., Jap.

Shibataea Makino (*Bambusa* p.p.). Gramineae (13). 1 Japan.

Shield fern, *Dryopteris Filix-mas* (L.) Schott; **prickly--**, *Aspidium aculeatum* Sw.

Shin leaf (Am.), *Pyrola*.

Shingle wood (W.I.), *Nectandra*.

Shisham, *Dalbergia Sissoo* Roxb.

Shittim wood, *Dalbergia*.

Shoe flower, *Hibiscus Rosa-sinensis* L.; -maker's bark (W.I.), *Byrsenima*.

Shola, *Aeschynomene aspera* L.

Shoot, the part of the pl. that comes from the plumule; **adv.**, see Adv. Sh.; **long and short-**, or -of **limited and unlimited growth**, *Berberis*, *Cactaceae*, *Coniferae*, *Spergula*.

Shore weed, *Littorella lacustris* L.

Shorea Roxb. Dipterocarpaceae. 90 Ceylon to Phil. Is. *S. robusta* Gaertn. f. (sal) is a valuable timber tree, with wood like teak, and is largely grown in India. It forms gregarious forests.

Short shoots, see Shoots.

Shortia Torr. et Gray. Diapens. 1 N. Carolina, 1 E. As. (cf. *Epigaea*).

Showers of sulphur, *Pinus*.

Shrub, a woody pl. not > 30 ft. high, much branched to ground.

Shrubby trefoil, *Ptelea trifoliata* L.

Shuteria Wight et Arn. Leguminosae (III. 10). 5 trop. Afr., As.

Shuttleworthia Meissn. = *Verbena* L. (Verben.).

Sibangea Oliv. Euphorbiaceae (A. 1. 1). 1 Gaboon.

Sibara Greene (*Cardamine* p.p.). Cruciferae (2). 6 Calif.

Sibbaldia L. (*Potentilla* p.p. *BH.*). Rosaceae (III. 2). 8 N. temp. |*.

Sibbaldiopsis Rydberg (*Potentilla* p.p.). Rosaceae (III. 2). 1 N. Am.

Siberian cedar, *Pinus Cembra* L.

Sibiraea Maxim. (*Spiraea* p.p. *BH.*). Rosaceae (I. 1). 1 Siberia.

Sibthorpia L. Scrophulariaceae (III. 1). 6 Eur., Medit., Nepal, Andes.

S. europaea L. (Cornish money-wort) in S. England.

Sicana Naud. Cucurbitaceae (3). 1 trop. Am., W.I. Fr. ed.

Siccus (Lat.), dry, juiceless.

Sickingia Willd. Rubiaceae (1. 3). 14 trop. S. Am. Some medicinal.

Sicklepod (Am.), *Arabis canadensis* L.

Sicydium Schlecht. Cucurbitaceae (2). 6 trop. Am.

Sicyomorpha Miers. Celastraceae. 2 Peru.

Sicyos L. Cucurbitaceae (4). 30 trop. Am., Polynes., Austr.

Sicyosperma A. Gray. Cucurbitaceae (4). 1 New Mexico, Texas.

Sida L. Malvaceae (2). 70 cosmop.

Sidalcea A. Gray. Malvaceae (2). 12 N.W. Am.

Sidanoda Wooton et Standley (*Anoda* p.p.). Malv. (2). 1 New Mexico.

Sidastrum E. G. Baker (*Sida* p.p.). Malvaceae (2). 1 trop. Am.

Side oats, *Bouteloua*; - **saddle flower**, *Sarracenia*.

Sideranthus Nutt. (*Aplopappus* Cass.). Compositae (3). 12 N. Am.

Sideritis Tourn. ex L. Labiatae (VI). 45 N. temp. |*.

Siderocarpus Small (*Acacia* p.p.). Leguminosae (I. 2). 1 N. Am.

Sideroxylon (Dill.) L. Sapotaceae (1). 90 palaeotrop.

Siebera J. Gay. Compositae (11). 1 W. As.

Siegesbeckia L. Compositae (5). 4 trop. and warm. temp. Heads small, with invol. of 5 bracts, covered with very sticky glandular hairs, aiding in distr., the whole head breaking off.

Sieglingia Bernh. = *Triodia* R. Br. p.p. (Gramin.).

Sievekingia Reichb. f. Orchidaceae (II. 13). 1 Costa Rica.

Sieversia Willd. (*Geum* p.p.). Rosaceae (III. 2). 10 N. Am.

Sigmatochilus Rolfe. Orchidaceae (II. 3). 1 Borneo.

Sigmatogyne Pfitzer (*Panisea* p.p.). Orchidaceae (II. 3). 2 Himalaya.

Sigmatosiphon Engl. Pedaliaceae. 1 S.W. Afr.

Sigmatostalix Reichb. f. Orchidaceae (II. 19). 6 trop. S. Am.

Sigmoid, S-shaped.

Silaus Bernh. Umbelliferae (III. 5). 8 N. temp. |* (1 Brit.).

Silene L. Caryophyllaceae (II. 1). 320 N. temp., esp. Medit. (7 in Brit.). Fls. of many (class F) adapted to butterflies, e.g. *S. acaulis* L. (moss-campion, a tufted alpine); others to moths, e.g. *S. inflata* Sm. (bladder campion), which emits scent at night.

Siler Crantz. Umbelliferae (III. 7). 1 Eur., Siberia.

Silicula, *Cruciferae*; **siliqua**, *Cruciferae*, *Capparidaceae*.

- Siliquamomum** Baill. Zingiberaceae (I). 1 Tonquin.
Silk cotton tree, *Eriodendron*; -grass (W.I.), *Nidularium*; -weed, *Asclepias*.
Silkworms, plants for, *Ailanthus*, *Lactuca*, *Maclura*, *Morus*.
Silky bent grass, *Apera*; -oak (Austr.), *Grevillea*.
Silphiosperma Steetz (*Brachycome* Cass.). Compositae (3). 1 Austr.
Silphium L. Compositae (5). 13 E. U.S. *S. laciniatum* L. is the 'compass-plant' of the prairies. In an exposed position its l. turn their edges to N. and S. and avoid the mid-day radiation. (Cf. *Lactuca*.) Cult. orn. fl.
Silvaea Phil. Portulacaceae. 4 Chili.
Silver bell tree (Am.), *Halesia*; -berry (Am.), *Elaeagnus argenteus* Pursh; -fir, *Abies*, *Picea*; -tree, *Leucadendron*; -weed, *Potentilla Anserina* L.
Silvia Allem. (*Neosilvia* Pax; *Endiandra* BH., *Mezilaurus* EP.). Lauraceae (II). 2 Brazil. Wood useful.
Silvia Benth. Scrophulariaceae (III. 2). 2 Mexico.
Silvianthus Hook. f. Rubiaceae (I. 2). 1 E. Bengal.
Silvorchis J. J. Smith. Orchidaceae (II. 1). 1 Java.
Silybum Vaill. ex Adans. Compositae (II). 2 Medit. *S. Marianum* Gaertn. (milk-thistle, Brit.) is now widely distributed over the pampas, where it was introduced.
Simaba Aubl. Simarubaceae. 20 trop. S. Am.
Simaruba Aubl. Simarubaceae. 6 trop. Am., W.I.
Simarubaceae (EP.; BH. incl. *Brunelliaceae*, *Cneoraceae*, *Koeberliniaceae*). Dicots. (Archichl. Geraniales). 28 gen., 125 sp., trop. and subtrop. Shrubs and trees with alt. pinnate or simple l., never gland-dotted. Fls. small, reg., ♂, often ∞, in axillary compound panicles or cymose spikes. K and C 3—7-merous. K free or more often united; C imbr. or rarely valv.; disc between sta. and ovary ring- or cup-like, sometimes enlarged into a gynophore; A twice as many as petals, obdiplost., often with scales at the base; G (4—5) or less, often free below and united by the style or stigma; ovules usu. 1 in each loc. as in Rutaceae. Schizocarp or caps.; endosp. thin or none; embryo with thick cots. A few yield useful timber. Chief genera: *Simaruba*, *Ailanthus*.
✓ **Simarubeae** (BH.) = Simarubaceae.
Simarubopsis Engl. Simarubaceae. 1 Togoland.
Simbuleta Forsk. (*Anarrhinum* Desf.). Scrophulariaceae (II. 3). 12 Medit., W.As., Abyssinia.
Simethis Kunth. Liliaceae (III). 1 Brit., W. and S. Eur.
Simmondsia Nutt. Buxaceae. 1 California.
Simocheilus Klotzsch. Ericaceae (IV. 2). 40 S. Afr.
Simple fruit, one indivisible fr. from one fl.; -l., with 1 blade.
Simplicia T. Kirk. Gramineae (8). 1 New Zealand.
Simsia R. Br. Proteaceae (I). 5 W. Austr.
Sinapis L. (*Brassica* p.p. BH.). Cruciferae (2). 5 Medit., Eur. *S. arvensis* L. (charlock) is an abundant weed of cult.; our cornfields are yellow with it in summer. *S. alba* L. is the white mustard.
Sinapodendron Lowe (*Brassica* p.p. BH.). Crucif. (2). 5 Madeira, &c.
Sincoraea Ule. Bromeliaceae (4). 1 Bahia.

- Sindechites** Oliv. Apocynaceae (II. 1). 1 S.W. China.
- Sindora** Miq. Leguminosae (II. 2). 6 Malaya.
- Sinensis** (Lat.), Chinese.
- Singana** Aubl. Leguminosae (inc. sed.). 1 Guiana.
- Sinistrorse**, turned to the left.
- Siuningia** Nees. Gesneriaceae (II). 20 Brazil. *S. speciosa* Hiern, &c. cult. (generally known as Gloxinias). Tuberous plants. Usual propagation by planting l. on the soil; from the base of the petiole a new pl. arises by budding (*cf.* Begonia, Streptocarpus).
- Sinofranchetia** Hemsl. (*Parvatia* p.p.). Lardizabalaceae. 1 China.
- Sinomenium** Diels (*Cocculus* p.p.). Menispermaceae. 1 E. As.
- Sinowilsonia** Hemsl. Hamamelidaceae. 1 China.
- Sinuate** (l.), with teeth and notches rounded (Leaf, fig. D).
- Sinus**, bay, re-entrant angle.
- Siolmatra** Baill. Cucurbitaceae (I). 2 Brazil, Paraguay.
- Sipanea** Aubl. Rubiaceae (I. 3). 3 S. Am.
- Siparuna** Aubl. Monimiaceae. 90 trop. Am.
- Siphanthera** Pohl. Melastomaceae (I). 12 Brazil, Guiana.
- Siphoboea** Baill. Gesneriaceae (I). 1 Phil. Is.
- Siphocampylus** Pohl. Campanulaceae (III). 110 trop. Am., W.I.
- Siphocodon** Turcz. Campanulaceae (I). 1 S. Afr.
- Siphocolea** Baill. Bignoniaceae (4). 3 Madag.
- Siphonandrium** K. Schum. Rubiaceae (I. 7). 1 New Guinea.
- Siphonanthus** L. = *Clerodendron* L. p.p. (Verben.).
- Siphonella** A. A. Heller (*Gilia* p.p.). Polemoniaceae. 1 W. N. Am.
- Siphonella** Small (*Fedia* p.p.). Valerianaceae. 2 N. Am.
- Siphonia** Rich. = *Hevea* Aubl. *S. elastica* Pers. = *H. guianensis*.
- Siphonidium** Armstr. Scrophulariaceae (III. 3). 1 New Zealand.
- Siphonochilus** Wood et Franks. Zingiberaceae (I). 1 Natal.
- Siphonodon** Griff. Celastraceae. 2 Malaya, Austr.
- Siphonogamy**, fertilisation by pollen tube.
- Siphonoglossa** Oerst. Acanthaceae (IV. B). 3 Am.
- Siphonostegia** Benth. Scrophulariaceae (III. 3). 3 As.
- Siphonostelma** Schlechter. Asclepiadaceae (II. 3). 1 S.W. Afr.
- Siphonychia** Torr. et A. Gray. Caryophyllaceae (I. 4). 2 Atl. N. Am.
- Sipolisia** Glaziou. Compositae (I). 1 Minas Geraes.
- Siris**, *Albizzia Lebbeck* Benth.
- Sirium** L. = *Santalum* L. (Santal.).
- Sisal hemp**, *Agave sisalana* Perrine.
- Sison** L. Umbelliferae (III. 5). 2 Eur., incl. Brit., Medit.
- Sissoo**, *Dalbergia Sissoo* Roxb.
- Sisymbrium** (Tourn.) L. (*BH.* incl. *Alliaria*). Cruciferae (2). 50 N. temp. *; 3 Brit., incl. *S. officinale* Scop. (hedge-mustard).
- Sisyndite** E. Mey. Zygophyllaceae. 1 S. Afr.
- Sisyranthus** E. Mey. Asclepiadaceae (II. 3). 8 S. Afr.
- Sisyrinchium** L. Iridaceae (II). 75 Am. Cult. orn. fl.
- Sisyrolepis** Radlk. Sapindaceae (inc. sed.). 1 Siam.
- Sitanion** Rafin. (*Elymus* L. p.p.). Gramineae (12). 12 N. Am.
- Sitilias** Rafin. (*Pyrrhopappus* DC.). Compositae (13). 6 U.S., Mexico.
- Sitka cypress**, *Chamaecyparis nutkaensis* Lindl. et Gord.
- Sium** (Tourn.) L. Umbelliferae (III. 5). 10 N. temp., trop. Afr.

- 2 in Brit. (water-parsnip). *S. Sisarum* L. (skirret) cult. for tuberous roots.
- Skimmia** Thunb. Rutaceae (IV). 1 Himal. to Japan, *S. japonica* Thunb., often cult. for its handsome foliage and red berries.
- Skirret**, *Sium Sisarum* L.
- Skolemora** Arruda. Inc. sed. 1 Brazil.
- Skull cap**, *Scutellaria*.
- Skunk cabbage**, *Symplocarpus foetidus* Nutt.
- Skytanthus** Meyen. Apocynaceae (I. 3). 3 Brazil, Chili.
- Slackia** Griff. Gesneriaceae (I). 1 Burma.
- Sladenia** Kurz. Dilleniaceae (Ternstr. *BH.*). 1 Yunnan.
- Sleep movements**, cf. Movement.
- Sloanea** L. Elaeocarpaceae. 45 trop.
- Sloe**, *Prunus spinosa* L.
- Sloetia** Teijsm. et Binn. Moraceae (I). 2 Malaya.
- Sloetiopsis** Engl. Moraceae (I). 1 Usambara.
- Small reed**, *Calamagrostis*.
- Smallia** Nieuwland = *Triorchos* Small et Nash (Orchid.).
- Smartweed** (Am.), *Polygonum*.
- Smeathmannia** (Soland.) R. Br. (*Paropsia* p.p.). Flacourtiaceae (6) (Passiflor. *BH.*). 6 trop. Afr.
- Smelophyllum** Radlk. Sapindaceae (I). 1 S. Afr.
- Smelowskia** C. A. Mey. Cruciferae (4). 8 temp. As., Pac. N. Am.
- Smilacina** Desf. Liliaceae (VII). 20 Himalaya to C. Am.
- Smilax** (Tourn.) L. Liliaceae (XI). 210 trop. and sub trop. Most are climbing shrubs with net-veined l. At base of l. spring two tendrils, one on either side, usu. regarded as modified stip., though these organs scarcely occur in Monocots. Stems often furnished with recurved hooks which aid in climbing. Fls. dioec., in umbels. The dried roots of several S. Am. sp. form sarsaparilla.
- Smirnowia** Bunge. Leguminosae (III. 6). 1 Turkestan.
- Smithia** Ait. Leguminosae (III. 7). 35 trop. As., Afr.
- Smithiantha** O. Ktze. (*Naegelia* Regel). Gesneriaceae (II). 6 Mexico. Cult.
- Smodingium** E. Mey. Anacardiaceae (3). 1 S. Afr.
- Smyrniopsis** Boiss. (*Smyrnum* p.p. *BH.*). Umbellif. (III. 4). 3 E. Medit.
- Smyrnum** (Tourn.) L. Umbelliferae (III. 4). 7 Medit., Eur., Brit. *S. Olusatrum* L. (alexanders), formerly used like celery.
- Smythea** Seem. Rhamnaceae. 4 Malay Archipelago, Polynesia.
- Snail flower**, *Arisaema*.
- Snake gourd**, *Trichosanthes anguina* L.; -head (Am.), *Chelone*; -'s head, *Fritillaria*; -root, *Cimicifuga*; black-- (Am.), *Sanicula*; button-- (Am.), *Liatris*; Senega--, *Polygala*; -wood, *Ophioxylon*, *Ophiocaryon*.
- Snapdragon**, *Antirrhinum majus* L., (W.I.) *Ruellia*.
- Sneeze wood**, *Pteroxylon*, (Am.) *Helenium*; -wort, *Achillea*.
- Snow ball tree**, *Viburnum Opulus* L.; -berry, *Symphoricarpus racemosus* Michx.; -drop, *Galanthus nivalis* L.; -drop tree, *Chionanthus*, *Halesia*; -flake, *Leucopjum*.
- Soap**, *Chlorogalum*, Liliaceae, *Limonia*, *Sapindus*, *Saponaria*; -berry

tree (W.I.), *Sapindus*; -tree, *Quillaja*; -wood (W.I.), *Clethra*; -wort, *Saponaria*.

Soaresia Sch.-Bip. Compositae (1). 1 campos of S. Brazil.

Sobole, a shoot from the ground.

Sobolewsia Marsch.-Bieb. Cruciferae (2). 3 W. As.

Sebralia Ruiz et Pav. Orchidaceae (II. 7). 33 Peru to Mexico.

Social habit, forming homogeneous forests, pine, birch, beech.

Societies, Plant, see Plant societies.

Socotora Balf. f. (*Periploca* p.p. *EP.*). Asclepiadaceae (1). 1 Socotra.

Socotranthus O. Ktze. = *Cochlanthus* Balf. f. (Asclep.).

Socratea Karst. (*Iriarteia* p.p. *EP.*). Palmae (IV. 1). 1 Brazil.

Sodiroa André. Bromeliaceae (1). 3 Colombia, Ecuador.

Soemmeringia Mart. Leguminosae (III. 7). 1 N.E. Brazil.

Soft grass, *Holcus*.

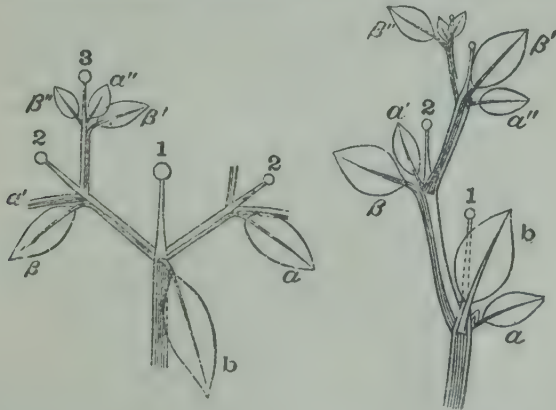
Sohnreya Krause. Rutaceae (1). 1 Manáos.

Soja bean, *Glycine*.

Soja Moench = *Glycine* L. p.p. (Legum.).

Sola, *Aeschynomene aspera* L.

Solanaceae (*EP.*, *BH.* incl. *Nolanaceae*). Dicots. (Sympet. Tubiflorae; Polemoniales *BH.*). 72 gen., 1500 sp. trop. and temp.; chief centre C. and S. Am., where there are 36 local gen.; in Eur. and As. only § 2 is repres. Herbs, shrubs or small trees; l. in the non-flowering part usu. alt., but in the infl.-portion alt. or in pairs; the arrangement in pairs is due to the mode of branching and adnation as illustrated in the figure. In *Datura* the branching is dichasial, and the bracts are adnate to their axillary shoots up to the point at which the next



Branching in Solanaceae (after Eichler); *Datura Stramonium* (left) and *Atropa Belladonna* (right). 1, 2, 3, flrs. or infls. of successive orders; b, bract of 1, a β bracts of 2, and so on.

branches arise, so that *a* looks like the bracteole of 2, rather than its bract. In *Atropa* the branching is cincinnal, one of the two branches at a node remaining undeveloped, and the bract is again adnate to its axillary branch. Of the pair of 1. thus found at any node, one is usu. smaller than the other. In *Solanum*, &c. further complications occur (see Eichler's *Blüthendiag.*).

Fls. sol. or in cymes, ♀, sometimes ♂. K (5), persistent; C (5), of various forms, rarely 2-lipped, usually folded and conv.; A 5, alt.

with petals, epipet., or fewer in $\frac{1}{2}$ fls., often opening by pores; $\underline{G}$ (2), obliquely placed in the fl. (the post. cpl. to the right, the ant. to the left, when shown in a floral diagram), 2-loc., sometimes with secondary divisions (e.g. *Datura*), upon a hypog. disc; ov. 1— ∞ in each loc., anatr. or slightly amphitr., on axile plac. (most often the plac. are swollen and the ov. numerous); style simple, with 2-lobed stigma. Berry or caps. Embryo curved or straight, in endosp. Fls. conspic., insect-visited; some, e.g. *Nicotiana*, suited to Lepidoptera. A few are economically important, e.g. *Solanum* (potato), *Nicotiana* (tobacco), *Lycopersicum*, *Capsicum*, &c.; *Datura*, *Atropa*, &c. are medicinal; several are favourites in horticulture.

Classification and chief genera (after von Wettstein): the S. are nearly related to Scrophulariaceae, the most general distinction being the oblique ovary: this however is by no means easily made out, and the zygomorphism of the fl. is most often used as a distinction. Certain genera of S. are nearly related to various Boraginaceae, Gesneriaceae, Nolanaceae, &c., and it is possible that the S. are not really a simple monophyletic family; they occupy a middle place between the Tubuliflorae with actinom. and those with zygom. fls.

- A. Embryo clearly curved, through more than a semicircle. All 5 sta. fertile, equal or only slightly different in length.
1. *Nicandreae* (ovary 3—5-loc., the walls of the loc. dividing the placentae irregularly): *Nicandra* (only genus).
 2. *Solaneae* (ovary 2-loc.): *Lycium*, *Atropa*, *Hyoscyamus*, *Physoalis*, *Capsicum*, *Solanum*, *Lycopersicum*, *Mandragora*.
 3. *Datureae* (ovary 4-loc., the walls dividing the placentae equally): *Datura*, *Solandra* (only genera).
- B. Embryo straight or slightly curved (less than a semicircle).
4. *Cestreae* (all 5 sta. fertile); *Cestrum*, *Nicotiana*, *Petunia*.
 5. *Salpiglossideae* (2 or 4 sta. fertile, of different lengths): *Salpiglossis*, *Schizanthus*.

Solandra L. = *Hydrocotyle* Tourn. (*BH.*) = *Centella* L. p.p. (Umb.).

Solandra Sw. Solanaceae (3). 6 trop. Am.

Solanopsis Börner (*Solanum* p.p.). Solanaceae (2). 2 Am.

Solanum (Tourn.) L. (incl. *Lycopersicum* Hill). Solanaceae (2). 122; trop. and temp. *S. Dulcamara* L. (bittersweet, nightshade) and *S. nigrum* L. in Brit. The fls. are small, with a cone of anthers opening at the tip as in Borago. *S. tuberosum* L. (S. Am.) is the potato. From the axils of the lowest l. there spring branches which grow horiz. underground and swell up at the ends into tubers (potatoes). That these are stem structures is shown by their origin and by their possession of buds—the 'eyes.' Each eye is a small bud in the axil of an aborted l. (repres. by a semicircular rim). When the parent plant dies down in autumn the tubers become detached, and in the next season they form new plants by the development of the eyes, at the expense of the starch and other reserves stored in the tuber. By heaping earth against the stem, so as to cover more of the leaf-axils, more of the axillary shoots are made to become tuber-bearing; hence the value of ridging potatoes. *S. Lycopersicum* L. (Am.) is the tomato, cult. for ed. fr. *S. Melongena* L., the egg-fruit, is cult. in warm countries for ed. fr.

- Solaria** Phil. Liliaceae (IV). 1 Chili.
- Soldanella** L. Primulaceae. 5 Alps of Eur. The fls. expand at very low temperatures, often coming up through the snow; they have a mechanism like that of *Erica*.
- Soldier plant** (W.I.). *Calliandra*.
- Solea** Spreng. = *Ionidium* Vent. (BH.) = *Hybanthus* Jacq.
- Solena** Willd. = *Posoqueria* Aubl. (Rubi.).
- Solenandra** Hook. f. Rubiaceae (I. 5). 1 Cuba.
- Solenanthus** Ledeb. Boraginaceae (IV. 1). 15 Medit., C. As.
- Solenidium** Lindl. Orchidaceae (II. 19). 1 Colombia.
- Solenixora** Baill. Rubiaceae (II. 4). 1 Madag.
- Solenocarpus** Wight et Arn. Anacardiaceae (2). 1 India.
- Solenocentrum** Schlechter. Orchidaceae (II. 3). 1 Costa Rica.
- Solenomelus** Miers. Iridaceae (II). 2 Chili.
- Solenophora** Benth. Gesneriaceae (II). 2 Mexico, C. Am.
- Solenoruellia** Baill. Acanthaceae (IV. B). 1 Mexico.
- Solenospermum** Zoll. Celastraceae. 1 Java.
- Solenostemma** Hayne. Asclepiadaceae (II. 1). 1 Egypt, Arabia.
- Solenostemon** Thonn. (*Plectranthus* p.p. BH.). Labi. (VII). 8 W. Afr.
- Solenosterigma** Klotzsch ex K. Krause = *Philodendron* Schott.
- Solenostigma** Endl. = *Celtis* Tourn. p.p. (Ulm.).
- Solenostyles** Host. Acanthaceae (inc. sed.). 1, habitat?
- Solenotus** Stev. = *Astragalus* Tourn. (Legum.).
- Solfia** Rechinger. Palmae (IV. 1). 1 Samoa.
- Solidago** (Vail.) L. Compositae (3). 90 Am.; 1 in Eur. (incl. Brit.),
S. Virgaurea L., the golden rod.
- Soliera** Clos (*Kurzamra* EP.). Labiatae (VI). 1 Chili.
- Solitary** (fl.), one per axil.
- Soliva** Ruiz et Pav. Compositae (7). 6 Am., Austr.
- Sollya** Lindl. Pittosporaceae. 2 W. Austr. Twiners.
- Solmsia** Baill. Gonystilaceae. 2 New Caledonia.
- Solms-Laubachia** Muehlenb. Cruciferae (4). 1 China.
- Solomon's seal**, *Polygonatum*.
- Somalia** Oliv. (*Barleria* p.p. EP.). Acanthaceae (IV. B). 1 trop. Afr.
- Sommerera** Schlechtend. Rubiaceae (I. 7). 2 Amazon valley, Mexico.
- Sommerfeltia** Less. Compositae (3). 1 S. Andes. Char. pl.
- Sommieria** Becc. Palmae (IV. 1). 2 New Guinea.
- Somphoxylon** Eichl. Menispermaceae. 1 Guiana.
- Sonchus** (Tourn.) L. Compositae (13). 45 [*], 3 Brit. (sow-thistle).
- Sondaria** Dennst. Rhamnaceae (inc. sed.). 1 Indomal.
- Sonerila** Roxb. (*Cassebeeria* Dennst.). Melastom. (1). 70 warm As.
- Sonnea** Greene. Boraginaceae (IV. 2). 6 Pac. N. Am.
- Sonneratia** L. f. (*Blatti* Adans.). Sonneratiaceae. 6 Indomal. Mangroves (*q.v.*), with the general habit of *Rhizophoraceae*. Aerial roots spring vertically out of the mud, arising as lat., negatively geotropic branches upon the ordinary roots; they are provided with aerenchyma, and appear to be respiratory organs.
- Sonneratiaceae** (*Blattiaceae*; EP.; *Lythraceae* p.p. BH.). Dicots. (Archichl. Myrtiflorae). 3 gen., 12 sp. trop. As. and Afr. Shrubs and trees with opp. entire exstip. l. and conspic. fls., heterochlam. or apert., ♂ or ♂ ♀, reg. K 4-8, C 4-8 or 0, A ∞, G (4-15), with one style and

multiloc. ov. with ∞ ovules. Caps. or berry; ∞ seeds, exalbum.

Chief gen. Sonneratia, Duabanga.

Sonzaya Marchand (*Canarium* p.p. *EP.*). Burseraceae. 1 Austr.

Sophia L. 1735 (*Sisymbrium* p.p.). Cruciferae (2). 20 N. Am.

Sophia L. 1775 = *Bombax* L. p.p. (Bomb.).

Sophoclesia Klotzsch. Ericaceae (III. 2). 10 Andes, Guiana, W.I.

Sophora L. Leguminosae (III. 1). 25 trop. and warm temp. Winter-buds naked. The wood is very hard.

Soprocattleya, **Soprolaelia**, **Soprolaeliocattleya**, **Soprocattlaelia** $\times$ Hort. Orchidaceae. Hybrids of *Sophronitis*.

Sophronanthe Benth. = *Gratiola* Rupp. (Scroph.).

Sophronitis Lindl. Orchidaceae (II. 6). 4 S.E. Brazil. Cult. orn. fl.

Sopubia Buch.-Ham. Scrophulariaceae (III. 2). 20 palaeotrop.

Sorbaria A. Br. (*Spiraea* p.p. *BH.*). Rosaceae (I. 1). 5 N. As., N. Am.

Sorbaronia $\times$ C. K. Schneider. Rosaceae. Hybrid *Sorbus-Aronia*.

Sorbopyrus $\times$ C. K. Schneider. Rosaceae. Hybrid *Sorbus-Pyrus*.

Sorbus (Tourn.) L. = *Pyrus* Tourn. p.p. (Ros.).

Sordidus (Lat.), dirty white.

Sorghastrum Nash (*Andropogon* p.p.). Gramineae (2). 4 N. Am.

Sorgho, *Sorghum vulgare* Pers.

Sorghum L. (*Andropogon*, p.p.). Gramineae (2). 13 trop. and subtrop. *S. vulgare* Pers. (millet or guinea corn), largely cult. in Medit. &c. as a cereal. From the haulm of the var. *saccharatum* Koern. sugar is sometimes prepared.

Soriferous, bearing sori.

Sorindeia Thou. Anacardiaceae (3). 10 trop. Afr., Madag.

Sorocea A. St Hil. Moraceae (II). 12 trop. Am.

Sorocephalus R. Br. Proteaceae (I). 10 S. Afr.

Sorosis, a fleshy multiple fruit, *Ananas*, &c.

Sorrel, *Rumex*; **wood-**, *Oxalis acetosella* L.

Sorus, a group of sporangia, *Cycadaceae*, *Filicales*, *Pteridophyta*.

Souari nut, *Caryocar*.

Souchong, *Thea*.

Soulamea Lani. Simarubaceae. 1 Moluccas to Fiji.

Soulangia Brongn. = *Phyllica* L. (Rhamn.).

Souleyetia Gaudich. (*Pandanus* p.p. *EP.*). Pandanaceae. 1, habitat?.

Souliea Franch. Ranunculaceae (2). 1 China.

Sour grass, *Panicum conjugatum* Berg.; - **sop**, *Anona muricata* L.

Souroubea Aubl. (*Ruyschia* *BH.*). Marcgraviaceae. 6 trop. Am.

Southern cold zone, see Zones of Veg.

Southernwood, *Artemisia Abrotanum* L.

Sow-bread, *Cyclamen*; - **thistle**, *Sonchus*.

Sowerbaea Smith. Liliaceae (III). 4 Austr.

Soy bean, *Glycine Soja* Sieb. et Zucc., *G. hispida* Maxim.

Soyauxia Oliv. Flacourtiaceae (6) (Passiflor. *BH.*). 5 W. trop. Afr.

Soyeria Monn. = *Crepis* Vaill. p.p. (Comp.).

Soymida A. Juss. Meliaceae (II). 1 Indomal. Astringent bark. Wood.

Spachea A. Juss. Malpighiaceae (II). 10 W.I., trop. S. Am.

Spadiceus (Lat.), chestnut-coloured, or bearing a spadix.

Spadiciflorae (Warming). The 3rd order of Monocots.

- Spadix**, a spike with fls. $\pm$ sunk in tissue, enclosed in a large l. or spathe, *Araceae*, *Cyclanthaceae*, *Palmae*, *Zostera*.
- Spananthe** Juss. Umbelliferae (I. 2). 1 trop. Am.
- Spanish bayonet**, *Yucca*; -berries, *Rhamnus infectoria* L.; -broom, *Spartium junceum* L.; -dagger, *Yucca*; -liquorice, *Glycyrrhiza glabra* L.; -needle, *Bidens*; -plum, *Spondias*.
- Spanoghea** Blume. Sapindaceae (I). 2 Malay Archipelago.
- Sparattanthelium** Mart. Hernandiaceae. 5 trop. Am.
- Sparattosperma** Mart. Bignoniaceae (2). 3 Brazil.
- Sparattosyee** Bur. Moraceae (II). 2 New Caledonia.
- Sparaxis** Ker. Iridaceae (III). 6 Cape Colony. Cult. orn. fl.
- Sparganiaceae** (*EP.*; *Typhaceae* p.p. *BH.*). Monocots. (Pandanales). Only gen. *Sparganium* (*q.v.*).
- Sparganium** (Tourn.) L. Sparganiaceae. 15 N. temp., Austr., N.Z.; 3 in Brit. (bur-weed), in ponds. Creeping rhiz. and stem projecting above water with the l. and fls. These in spherical heads, the σ usu. higher up than the ρ . P 3—6, scaly, sepaloid; σ A 3—6, alt. with P when equal in number; the ρ G 1 or (2); ovule 1, pend. near base of ovary, with micropyle up. Fr. drupaceous, with album. seed. Fl. protog., anemoph.
- Sparganophorus** Vaill. ex Crantz. Compositae (I). 1 trop. Am., Afr.
- Sparmannia** L. f. Tiliaceae. 3 trop. and S. Afr. Fls. in cymose umbels (easily recognized by centrifugal order of opening). Sta. sensitive, moving outwards when touched (*cf.* *Helianthemum*).
- Sparrow grass**, *Asparagus*.
- Sparsus** (Lat.), scattered.
- Spartina** Schreb. Gramineae (II). 7 temp.; 1 Brit. Halophytes.
- Spartium** L. Leguminosae (III. 3). 1 Medit., *S. junceum* L. (Spanish broom), resembling the broom in habit. Fls. explosive like *Genista*. They yield yellow dye, the pl. fibre.
- Spartothamnella** Briq. (*Spartothamnus* p.p.). Verb. (3). 1 Austr.
- Spartothamnus** A. Cunn. Verbenaceae (3). 3 Austr.
- Spatalla** Salisb. Proteaceae (I). 20 S. Afr.
- Spatallopsis** Phillips (*Spatalla* p.p.). Proteaceae (I). 5 S. Afr.
- Spathacanthus** Baill. Acanthaceae (IV. B). 2 C. Am.
- Spathanthemum** Schott. Araceae (VII). 2 Bolivia.
- Spathanthus** Desv. Rapateaceae. 1 Guiana.
- Spathe**, *cf.* *Spadix*.
- Spathelia** L. Rutaceae (III). 2 W.I.
- Spathicarpa** Hook. Araceae (VII). 5 Brazil, Paraguay. Spadix adnate to spathe, monoec. Down the centre run 1—3 rows of σ fls., each of a stalked synandrium; at the sides are the ρ fls., each of a bottle-shaped ovary, surrounded by stds.
- Spathidolepis** Schlechter. Asclepiadaceae (II. 3). 1 New Guinea.
- Spathiflorae**. The 7th order of Monocots.
- Spathiger** Small (*Epidendrum* p.p.). Orchidaceae (II. 6). 1 Florida.
- Spathionema** Taub. Leguminosae (III. 10). 1 trop. Afr.
- Spathiphyllum** Schott. Araceae (II). 28 trop. Am., Phil. Is., Celebes. Spathe partly adnate to spadix. Fl. ρ , with P.
- Spathodea** Beauv. Bignoniaceae (2). 3 trop. Afr. Large water-pores

on backs of leaflets near midrib. In *S. campanulata* the K is inflated and water secreted between it and the C.

Spathoglottis Blume. Orchidaceae (II. 9). 15 Indomal.

Spatholirion Ridl. Commelinaceae. 1 Malay Peninsula.

Spatholobus Hassk. Leguminosae (III. 10). 20 trop. As

Spathulopetalum Chiov. Asclepiadaceae (II. 3). 1 Erythraea.

Spatterdock (Am.). *Nuphar*.

Spatularia Haw. (*Saxifraga* p.p. EP.). Saxifrag. (I). 8 N. Am., arctic.

Spatulate, spoon-shaped, l. of daisy.

Spear grass, *Stipa*, *Poa*, &c.; **-mint**, *Mentha*; **-wort** (Am.), *Ranunculus*.

Species, see Nomenclature.

Speciosus (Lat.), handsome.

Specklinia Lindl. = *Pleurothallis* R. Br. (Orchid.).

Spectabilis (Lat.), remarkable.

Spectans (Lat.), opposite.

Specularia Heist. Campanulaceae (I. 1). 10 N. temp., S. Am. *S. Speculum* A. DC., *Venus'* looking-glass, cult. orn. fl.

Speedwell, *Veronica*.

Speirantha Baker. Liliaceae (VII). 1 Shanghai.

Speirostyla Baker. Tiliaceae (Stercul. auct.). 1 Madag.

Spelt, *Triticum Spelta* L.

Spenceria Trimen. Rosaceae (III. 5). 1 W. China.

Spennera Mart. ex DC. = *Aciotis* D. Don (Melast.).

Sperauskia Baill. Euphorbiaceae (A. II. 2). 1 N. China.

Spergula L. Caryophyllaceae (I. 2). 3 temp. *S. arvensis* L., spurry, a general weed. The axillary shoots do not lengthen their internodes, so that the l. seem to be tufted. Fls. in cymes, gynomonoec. or gynodioec. Sometimes used as fodder.

Spergularia J. et C. Presl (*Buda* Adans., *Lepigonum* Wahlb., *Tissa* Adans.). Caryophyllaceae (I. 2). 20 cosmop., mostly halophytes.

Sperm- (Gr. pref.), seed or male; **-aphytes**, seed-plants; **-atozoid**, a swimming ♂ sexual cell.

Spermabolus Teijsm. et Binn. Magnoliaceae. 1 Moluccas.

Spermacoe Dill. ex L. (*BH.* incl. *Borreria*). Rubiaceae (II. 10). 2 warm Am.

Spermaphyta or Phanerogamae. One of the great divisions of the Vegetable Kingdom, comprising all those plants which produce seeds. Divided into Gymnospermae and Angiospermae.

Spermolepis Brongn. et Gris. Myrtaceae (II. 1). 2 New Caledonia.

Sphacele Benth. Labiatae (VI). 20 warm Am., Hawaiian Is.

Sphacophyllum Benth. Compositae (4). 5 Madag., Afr. trop.

Sphaeralcea A. St Hil. Malvaceae (2). 28 Cape Col., Am.

Sphaeranthus Vaill. ex L. Compositae (4). 20 palaeotrop.

Sphaerocardamum S. Schau. Cruciferae (4). 1 Mexico

Sphaerocodon Benth. Asclepiadaceae (II. 3). 5 Afr.

Sphaerocoma T. Anders. Caryophyllaceae (I. 4). 2 Arabia, Persia.

Sphaerodendron Seem. (*Cussonia* p.p.). Araliaceae (1). 1 Angola.

Sphaerolobium Sm. Leguminosae (III. 2). 12 Austr.

- Sphaeromeria** Nutt. (*Chrysanthemum* p.p. *EP.*, *Tanacetum* p.p. *BH.*).
Compositae (7). 4 N. Am.
- Sphaeromorphaea** DC. Compositae (7). 1 Indomal.
- Sphaerophysa** DC. (*Swainsona* *EP.*). Legum. (III. 6). 2 N. As.,
E. Medit.
- Sphaerosepalum** Baker. Cochlospermaceae. 2 Madag.
- Sphaerosicyos** Hook. f. Cucurbitaceae (3). 1 S. Afr., Masc. Is.
- Sphaerostigma** Fisch. et Mey. (*Oenothera* *BH.*, *Chamissonia* p.p. *EP.*).
Onagraceae (2). 25 N. Am.
- Sphaerostylis** Baill. Euphorbiaceae (A. II. 2). 1 Madag.
- Sphaerothalamus** Hook. f. Anonaceae (1). 1 Borneo.
- Sphaerothylox** Bischoff ex Krauss. Podostemaceae. 4 Afr.
- Sphagneticola** O. Hoffm. Compositae (5). 1 Rio de Janeiro.
- Sphallerocarpus** Bess. (*Conopodium* *BH.*). Umbellif. (III. 2). 1 Eur.
- Sphedamnocarpus** Planch. ex Benth. et Hook. f. Malpighiaceae (1).
5 warm Afr., Madag.
- Sphenandra** Benth. Scrophulariaceae (II. 5). 2 S. Afr.
- Sphenocentrum** Pierre. Menispermaceae. 1 W. trop. Afr.
- Sphenoclea** Gaertn. Campanul. (I). 1 trop. Caps. circumscissile.
- Sphenodesma** Jack. Verbenaceae (6). 10 Indomal.
- Sphenogyne** R. Br. = *Ursinia* Gaertn. p.p. (Comp.).
- Sphenopholis** Scribner. Gramineae (9). 7 N. Am.
- Sphenopus** Trin. Gramineae (10). 1 Medit. Halophyte.
- Sphenostemon** Baill. Aquifoliaceae (?). 2 New Caledonia.
- Sphenostigma** Baker. Iridaceae (II). 5 trop. Am.
- Sphenostylis** E. Mey. (*Vigna* *BH.*). Leguminosae (III. 10). 5 Afr.
- Sphenotoma** Sweet (*Dracophyllum* p.p. *BH.*). Epacridaceae (2). 6
W. Austr.
- Sphinctacanthus** Benth. Acanthaceae (IV. B). 2 E. Bengal, Siam.
- Sphinctanthus** Benth. Rubiaceae (I. 8). 5 S. Am.
- Sphinctospermum** Rose (*Tephrosia* p.p.). Legum. (III. 6). 1 Mexico.
- Sphondylium** (Tourn.). Adans. = *Heracleum* L. (Umbell.).
- Sphyranthra** Hook. Euphorbiaceae (inc. sed.). 1 Andamans.
- Sphyrospermum** Poepp. et Endl. Ericaceae (III. 2). 5 trop. S. Am.
- Spicate**, in spikes, or spike-formed.
- Spice**, see Condiment; - **bush** (Am.), *Lindera*.
- Spicule**, a small spike.
- Spider orchis**, *Ophrys aranifera* Huds.; - **wort**, *Tradescantia*.
- Spigelia** L. Loganiaceae. 35 warm Am. Some, e.g. *S. Anthelmia*
L. and *S. marilandica* L. (Indian pink, or pink-root), have apparent
whorls of 4 l. close under the infl.; in reality the internode between
two pairs is very short. Cyme like Boraginaceae. Capsule falls away
leaving a sort of cupule. Style jointed.
- Spiguel**, *Meum athamanticum* Jacq.
- Spike**, a raceme with fls. all sessile, *Piper*, *Plantago*; - **grass** (Am.),
Uniola; - **let**, *Cyperaceae*, *Gramineae*; - **nard**, *Nardostachys*, (Am.)
Aralia racemosa L.; - **rush**, *Eleocharis*.
- Spilanthus** Jacq. Compositae (5). 35 trop.
- Spilocarpus** Lem. Boraginaceae (inc. sed.). 1 Cuba.
- Spinach**, *Spinacia oleracea* L.; **New Zealand** -, *Tetragonia*.
- Spinacia** (Tourn.) L. Chenopodiaceae (A). 2 E. Medit. *S. oleracea*

L. is the spinach. Annual herbs with cymes of dioec. fls., anemoph. The bracteoles harden round the fr. as a membranous wing.

Spindle tree, *Euonymus*.

Spingula Nor. Inc. sed. Nomen.

Spinifex L. Gramineae (5). 4 Austr., Ceylon to Japan. Dioec. ♀ spikelets 1-flowered with long spiny bracts, massed together into a head. This breaks off when the fruits are ripe, and blows about (*cf.* *Anastatica*), finally sticking in the sand and breaking up.

Spinks, *Cardamine pratensis* L.

Spinose, spiny (l.), *Acantholimon*, *Acanthophyllum*, *Acanthus*, &c.

Spiracantha H. B. et K. Compositae (1). 1 C. Am., Colombia.

Spiradiclis Blume. Rubiaceae (1. 2). 3 Bengal to Java.

Spiraea L. (excl. *Ulmaria* Tourn.). Rosaceae (1. 1). 50 N. temp.

Spiraeanthemum A. Gray. Cunoniaceae. 6 Polynesia.

Spiraeanthus Maxim. Rosaceae (1. 1). 1 E. C. As.

Spiraeopsis Miq. Cunoniaceae. 1 Celebes.

Spiral (fl.), with l. spirally arranged, not in whorls.

Spiranthera A. St Hil. Rutaceae (1). 1 S. Brazil.

Spiranthes Rich. Orchidaceae (11. 2). 50 N. temp., S. Am.; 3 in Brit., incl. *S. autumnalis* Rich. (lady's tresses). *S. Romanzoffiana* Cham. et Schlecht., a native of N. Am. and Kamtschatka, occurs in meadows at Bantry Bay, Ireland, and has caused much discussion among geographical botanists (*cf.* *Eriocaulon*). Infl. twisted, so that the fls. form a spiral. For mechanism see Darwin, *Orchids*, p. 106.

Spire lily, *Galtonia*.

Spirea Pierre (*Aspilia* p.p. *EP.*). Compositae (5). 1 trop. Afr.

Spirella Costantin. Asclepiadaceae (11. 3). 1 Indochina.

Spirochloe Lunell (*Schedonnardus* Steud.). Gramineae (11). 1 N. Am.

Spirodela Schleiden (*Lemna* p.p. *BH.*). Lemnaceae. 2 cosmop. exc. Afr.

Spirolobium Baill. Apocynaceae (11. 1). 1 Cambodia.

Spirolobous, *Cruciferae*.

Spironema Lindl. Commelinaceae. 1 Mexico.

Spiropetalum Gilg. Connaraceae. 3 W. Afr.

Spirorhynchus Kar. et Kir. Cruciferae (2). 1 C. As.

Spirospermum Thou. Menispermaceae. 1 Madag.

Spirostachys S. Wats. Chenopodiaceae (A). 3 Am.

Spirostigma Nees. Acanthaceae (1V. A). 1 Brazil.

Spirotheca Baill. Bignoniaceae (2). 1 Cuba.

Spirotheca Ulbrich. Bombacaceae. 2 Brazil.

Spirotropis Tul. Leguminosae (III. 1). 1 French Guiana.

Spitzelia Sch.-Bip. = *Pieris* L. p.p. (Comp.).

Spleenwort, *Asplenium*.

Splendens (Lat.), glittering.

Spodiopogon Trin. Gramineae (2). 8 As.

Spogel seed, *Plantago ovata* Forst.

Spondianthus Engl. Anacardiaceae (2). W. trop. Afr.

Spondias L. Anacardiaceae (2). 6 trop. The 1—5-seeded drupe is ed. (hog-plum); endocarp fibrous outside.

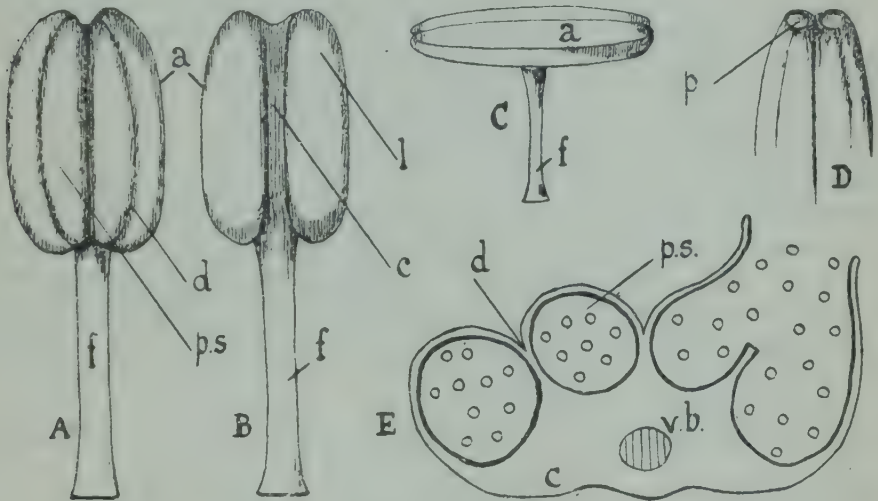
Spondiopsis Engl. Anacardiaceae (2). 1 Kilimandjaro.

Spongopyrena Van Tiegh. (*Ochna* p.p.). Ochnaceae. 4 trop. Afr.

- Spongostemma** Van Tiegh. = *Scabiosa* Tourn. p.p. (Dips.).
Sponia Comm. ex Lam. = *Trema* Lour. (Ulm.).
Spontaneous movements, see *Movements*.
Spoonwood (Am.), *Kalmia latifolia* L.; -wort, *Cochlearia*.
Sporadic, scattered widely.
Sporangia, spore-receptacles, *Filicales*; -**iophore**, sp.-carrier.
Spore, an asexual repr. cell, *Filicales Pteridophyta*; -**ocarp**, *Filicales*, *Marsileaceae*, *Salviniaceae*; -**ophyll**, l. bearing - (incl. sta. and cpls.); -**ophyte**, the spore-bearing pl.
Sporobolus R. Br. Gramineae (8). 90 Am., warm |*.
Sporoxeia W. W. Smith. Melastomaceae (1). 1 Burma.
Sport, a suddenly appearing marked deviation from existing type.
Spotted orchis, *Orchis maculata* L.
Spraguea Torr. Portulacaceae. 5 W. N. Am.
Sprekelia Heist. Amaryllidaceae (1). 1 Mexico, *S. formosissima* Herb., a greenhouse favourite (Jacobean lily).
Sprengelia Sm. Epacridaceae (2). 23 Austr., Tasmania. ✓
Sprengeria Greene (*Lepidium* p.p.). Cruciferae (2). 3 S.W. U.S.
Spring beauty (Am.), *Claytonia*.
Spruce fir, Norway **Spruce**, *Picea excelsa* Link; **hemlock** -, *Tsuga canadensis* Carr.
Sprucea Benth. (*S. p. p. EP.*). Rubiaceae (1. 3). 1 Brazil.
Spur, a drawn portion of base of sep. or pet. or (K) or (C), *Balsaminaceae*, *Centranthus*, *Orchidaceae*, *Valeriana*, *Viola*; or a short shoot in *Coniferae*; -**valerian**, *Centranthus*.
Spurge, *Euphorbia*; -**flax**, -**laurel**, *Daphne*.
Spurious dissepiment, false septum, *Cruciferae*, &c.
Spurry, *Spergula arvensis* L.
Spyridium Fenzl. Rhamnaceae. 30 temp. Austr.
Squamate, scaly.
Squamellaria Becc. Rubiaceae (11. 5). 2 Fiji.
Squamulae intravaginales, *Potamogetonaceae*.
Squarrosus (Lat.), roughly scurfy with spreading processes.
Squash, *Cucurbita Pepo* L., var.
Squaw root (Am.), *Conopholis*; -**weed** (Am.), *Senecio aureus* L.
Squill, *Urginea Scilla* Steinh.; **striped** -, *Puschkinia*.
Squinancy wort, *Asparula cynanchica* L.
Squirrel tail grass, *Hordeum jubatum* L.
Squirting cucumber, *Ecballium Elaterium* A. Rich.
Squitch grass, *Agropyron repens* Beauv.
Staavia Dahl. Bruniaceae. 7 S. Afr.
Staberoha Kunth. Restionaceae. 6 S. Afr.
Stachyacanthus Nees. Acanth. (inc. sed.). 1 Brazil. Fl. 4-merous.
Stachyanthemum Klotzsch in Schomb. = *Cyrilla* Garden. (Cyr.).
Stachyanthus Engl. Icacinaceae. 1 trop. Afr.
Stachyarrhena Hook. f. Rubiaceae (1. 8). 3 Amazon valley.
Stachycephalum Sch.-Bip. ex Benth. Compositae (5). 2 Andes.
Stachydesma Small (*Hedeoma* p.p.). Labiatae (vi). 2 N. Am.
Stachyothyrsus Harms. Leguminosae (11. 7). 2 trop. Afr.
Stachyphrynium K. Schum. Marantaceae. 10 Indomal.
Stachys (Tourn.) L. Labiatae (vi). 200 cosmop., exc. Austr.,

- N.Z.; 5 in Brit., incl. *S. Betonica* Benth. (wound-wort), *S. palustris* L. (marsh betony). Tubers of *S. Sieboldi* Miq. (crosnes) ed.
- Stachystemon** Planch. Euphorbiaceae (B. 1). 3 W. Austr.
- Stachytarpheta** Vahl. Verbenaceae (1). 45 Am. L. of *S. dichotoma* Vahl (*S. jamaicensis* Gard.) sometimes used as tea.
- Stachyuraceae** (EP.; *Ternstroemiaceae* p.p. BH.). Dicots. (Archichl. Parietales). Only genus *Stachyurus*.
- Stachyurus** Sieb. et Zucc. Stachyuraceae. 4 Japan to Himal. Small shrubs. with alt. l. and ♀ or polyg. fls. in axillary racemes. K 4, C 4, A 4+4, G (4) with ∞ ov. Berry, ∞ seeds, aril, endosp.
- Stackhousia** Sm. Stackhousiaceae. 15 Austr., N.Z.
- Stackhousiaceae**. Dicots. (Archichl. Sapindales; Celastrales BH.). 2 gen., 18 sp., Austr., N.Z. Herbs ± xero. with racemose or cymose infls. of ♀ fls. K (5); C 5, perig.; disc present; A 5; G (2—5), 2—5-loc., with 1 erect anatrop. ov. in each loc.; raphe ventral. Schizocarp. Seed with endosp. *Genera*: *Stackhousia*, *Macgregoria*. Closely allied to Celastraceae.
- Stackhousieae** (BH.) = Stackhousiaceae.
- Stadmannia** Lam. Sapindaceae (1). 1 Mauritius.
- Staehelina** L. Compositae (II). 6 Medit.
- Staelia** Cham. et Schlecht. Rubiaceae (II. 10). 10 S. Am.
- Staff tree** (Am.), *Celastrus*.
- Stagger bush** (Am.), *Andromeda Mariana* L.
- Staghorn fern**, *Platynerium*; -moss, *Lycopodium*.
- Stahlia** Bello. Leguminosae (II. 2). 1 Porto Rico. Good timber.
- Stahlianthus** O. Ktze. (*Kaempferia* p.p. EP.). Zingiber. (1). 1 Siam.
- Stalagmitis** Murr. = *Garcinia* L. p.p. (Guttif.).
- Stamen**, a microsporophyll in a fl., usu. a stalked organ, or *filament*, bearing an *anther*, the latter composed of 2 lobes or *thecae*, united by a prolongation of the filament, the *connective*, each lobe with two *pollen sacs*, opening by a definite line of dehiscence, or pore, to allow escape of pollen.
- The *androecium* or stamens may be *hypo-*, *peri-* or *epi-gynous*; *epi-phyllous*-, *-petalous*, or *-sepalous* (concrecent with P, C, or K); *diplostemonous* (in two whorls, the outer alt. with the C, and as numerous), *obdiplostemonous* (in two whorls, the outer opp. or *anteposed* to the pets., Caryophyllaceae), *haplo-* or *iso-stemonous* (in one whorl, alt. or anteposed to C, as in Primulaceae), or in 2 whorls (Rosaceae). The sta. may be few and *definite* (usu. under 20, often described as *mon-*, *di-androus*, &c., according to the number), or *indefinite* (over 20, Ranunculaceae, Rosaceae, &c.); they may be all free (*monandrous*... *polyandrous*), or concrecent in 1, 2, 3, many bundles (*mon-*, *di-*, *tri-poly-adelphous*) with free anthers, or including the anthers into one mass (*synandrium*, adj. *synandrous*) as in many Araceae, Cucurbitaceae, Cyclanthera, *Phyllanthus* sp.; they may be concrecent also with the gynaecium (*gynandrous*, Orchidaceae), or have the anthers only united (*syngenesious*, Compositae). There may be two sta. longer than the rest (*didynamous*, Labiatae), or 4 (*tetradynamous*, Cruciferae).
- The anther may be *sessile* or on a *filament*; may be joined to the filament by its whole length (*adnate*, *dorsifixed*, A in fig.) or by its base (*innate*, *basifixed*), or balanced on it, forming a T (*versatile*, C);

may be *extrorse* or *introrse* (opening away from or towards, centre of fl.). Its dehiscence may also be *longitudinal* (A), or *transverse*, *valvular* (by lids, Berberidaceae, Lauraceae), or by *pores* (Ericaceae, Gentianaceae), &c., D. The thecae may be twisted as in Cochliostema, Columelliaceae, Cucurbitaceae. The pollen sacs may be numerous, as in Viscum, &c., *septate* or chambered (Mimoseae, some Onagraceae,



A, stamen with adnate anther from the front; B, the same from the back. C, stamen with versatile anther. D, tip of an anther with porous dehiscence. E, cross section of a ripe adnate anther to show pollen-sacs; the two sacs in the right-hand lobe have just opened. a, anther, c, connective, d, line of dehiscence, f, filament, l, anther-lobe, p, pore, p.s. pollen-sac, v.b. vascular bundle.

&c.). There may be *appendages* on the filaments (Amaryllidaceae, Hydrophyllaceae, Zygophyllum), or on the anthers (Ericaceae, Melastomaceae). The pollen may be *smooth*, or *warty*, *powdery* or *coherent*, *waxy*, &c.; it may be united into groups of 4 grains (*tetrads*, Ericaceae, &c.), or masses (*pollinia*, Asclepiadaceae, Orchidaceae).

Staminate fl., male.

Staminode, an aborted or vestigial stamen, *Acanthaceae*, *Araceae*, *Canna*, *Orchidaceae*, *Pentstemon*, *Scrophularia*; it may be small and papilla-like or petaloid (*Canna*, *Alarantaceae*), or form a nectary, (*Loasaceae*).

Standard, *Leguminosae*.

Stanfieldia Small (*Aplopappus* p.p.). Compositae (3). 1 N. Am.

Stanfordia S. Wats. Cruciferae (4). 1 California.

Stangea Graebn. Valerianaceae. 5 Peru.

Stangeria T. Moore. Cycadaceae. 1 Natal, *S. paradoxa* T. Moore. See fam. for details.

Stanhopea Frost. Orchidaceae (II. 13). 25 trop. Am. Epiph. with large pendulous fls. Labellum very complex (*cf.* *Coryanthes*), forming with the column a sort of cage. Cult. orn. fl.

Stanhopeastrum Reichb. f. (*Stanhopea* p.p. BH.). Orchidaceae (II. 13). 1 Guatemala.

- Stanleya** Nutt. Cruciferae (1). 5 W. U.S.
- Stanleyella** Rydberg (*Thelypodium* p.p.). Cruciferae (1). 1 N. Am.
- Stapelia** L. Asclepiadaceae (II. 3). 100 S. and trop. Afr., carrion-flowers. Like the Cacti and the fleshy Euphorbias they inhabit arid regions, and exhibit similar swollen stems, the l. reduced to thorns or scales, standing in 4 ranks corresponding to the usual l. arrangement in the fam. The green tissue occupies the periphery of the stem, and the centre is full of water-storage cells. Fls. large with dull red colour and carrion smell, attracting flies. Corona double.
- Stapfiella** Gilg. Euphorbiaceae (A. II. 2). 1 C. Afr.
- Stapfiola** O. Ktze. = *Demostachya* Stapf (Gram.).
- Staphidiastrum** Naud. = *Sagraea* DC. (Melast.).
- Staphidium** Naud. = *Clidemia* D. Don p.p. (Melast.).
- Staphylea** L. Staphyleaceae. 7 N. temp. Cult. orn. shrub.
- Staphyleaceae** (EP.; *Sapindaceae* p.p. BH.). Dicots. (Archichl. Sapindales). 6 gen., 20 sp., chiefly N. hemisph. Shrubs or trees with alt. or opp. l., usu. unequally pinnate, stip. Fls. in panicles, reg. 5-merous, with the axis forming a cupule and intra-staminal disc. K 5; C 5; A 5; $\underline{G}$ (3 or 2), 3-loc. with ∞ anatrop. ov., usu. ascending, with ventral raphe. Capsule. Embryo straight, in rich endosp. *Chief genera*: *Staphylea*, *Turpinia*.
- Staphylorhodos** Turcz. Rosaceae (inc. sed.). Gen. dubium. 1 New Zeal.
- Staphysora** Pierre. Euphorbiaceae (A. I. 1). 3 W. trop. Afr.
- Star anise**, *Illicium*; - **apple**, *Chrysophyllum*; - **cucumber** (Am.), *Sicyos*; - **grass** (Am.), *Hypoxis*, *Aletris*; - **of Bethlehem**, *Ornithogalum*; - **of night** (W.I.), *Clusia rosea* Jacq.; - **thistle**, *Centaurea*; - **wort** (Am.), *Stellaria*, *Aster*; **water-wort**, *Callitriche*.
- Starch**, one of the chief carbohydrates of reserves; cf. Edible Products.
- Starr grass**, *Ammophila arundinacea* Host.
- Stasium** (Cl.), a stagnant pool formation.
- Stathmostelma** K. Schum. Asclepiadaceae (II. 1). 8 trop. Am.
- Statice** Tourn. ex L. (excl. *Goniolimon* Boiss.). Plumbaginaceae. 130 cosmop., chiefly in steppes and salt marshes. *S. Limonium* L. (sea-lavender and 2 others, on the coast of Brit. Infl. cpd., mixed, the total infl. a spike, the partial a drepanium. Fls. many, e.g. *S. Limonium*, heterostyled like *Primula*).
- Staudtia** Warb. Myristicaceae. 2 W. Afr.
- Stauntonia** DC. Lardizabalaceae. 6 China, Japan.
- Stauranthera** Benth. Gesneriaceae (I). 4 Indomal.
- Stauranthus** Liebm. Rutaceae (IV). 1 S. Mexico.
- Staurochilus** Ridl. (*Trichoglottis* p.p.). Orchidaceae (II. 20). 1 Malay Peninsula.
- Staurochlamys** Baker. Compositae (5). 1 N. Brazil.
- Staurogyne** Wall. (*Ebermaiera* BH.). Acanth. (I). 45 trop. exc. Afr.
- Staurophragma** Fisch. et Mey. Scrophulariaceae (I. 1). 1 As. Min.
- Stauroopsis** Reichb. f. Orchidaceae (II. 20). 5 S.E. As., Malaya.
- Staurostigma** Scheidw. (*Asterostigma* EP.). Araceae (VII). 5 Braz.
- Stawellia** F. Muell. Liliaceae (III). 1 S.W. Austr.
- Stearine**, *Cocos*.

- Stearodendron** Engl. (*Allanblackia* p.p. *EP.*). Gutt. (v). 1 E. Afr.
- Stechmannia** DC. = *Jurinea* Cass. p.p. (Comp.).
- Steganthera** Perk. Monimiaceae. 15 New Guinea, Celebes, &c
- Stegnosperma** Benth. Phytolaccaceae. 1 California to W.I.
- Stegolepis** Klotzsch ex Koern. Rapateaceae. 4 Guiana, Venez.
- Stegosia** Lour. (*Rottboellia* p.p.). Gramineae (2). 1 N. Am.
- Steinheilila** Decne. Asclepiadaceae (II. 1). 1 Arabia.
- Steinmannia** Phil. f. Liliaceae (IV). 1 Chili.
- Steirachne** Ekman. Gramineae (10). 1 Ceara.
- Steiractinia** Blake. Compositae (5). 6 Ecuador, Colombia.
- Steirodiscus** Less. Compositae (8). 3 S. Afr.
- Steirouema** Rafin. Primulaceae. 4 N. Am.
- Steirosanchezia** Lindau. Acanthaceae (IV. A). 1 Peru.
- Stelechocarpus** Hook. f. et Thoms. Anonaceae (1). 4 Malaya. Fr. ed.
- Stelechospermum** Blume. Guttiferae. Genus dubium. 1 Java.
- Steleostemma** Schlechter. Asclepiadaceae (II. 1). 1 Bolivia.
- Stelestylis** Drude. Cyclanthaceae. 1 E. Brazil.
- Stelis** Sw. Orchidaceae (II. 8). 160 trop. Am.
- Stellaria** L. (incl. *Ma'achium* Fries). Caryophyllaceae (I. 1). 100 sp. cosmop.; 7 in Brit. (chickweed, stitchwort). Of the Brit. sp., *S. media* Cyrill. has small homogamous fls. that fert. themselves in absence of insects; it flowers all the year, and in winter (? on account of weak light, cold, &c.) is often cleistogamic. The number of sta. is most often 3, but varies a good deal. The fls. of *S. graminea* L. are larger and protandr., but with autogamy, whilst in *S. Holostea* L. the fls. are still larger and very protandr. with little self-fert.
- Stellariopsis** Rydberg (*Potentilla* p.p.). Rosac. (III. 2). 1 N. Am.
- Stellate**, star-shaped.
- Stellera** J. G. Gmel. ex L. Thymelaeaceae. 8 temp. As.
- Stellilabium** Schlechter (*Teliipogon* p.p.). Orch. (II. 18). 1 Peru.
- Stellularia** Benth. Scrophulariaceae (III. 2). 1 trop. W. Afr.
- Stelmation** Fourn. (*Metastelma* p.p. *EP.*). Asclep. (II. 1). 1 Brazil.
- Stelmatocodon** Schlechter. Asclepiadaceae (inc. sed.). 1 Bolivia.
- Stelmatocrypton** Baill. Asclepiadaceae (I). 1 Khasias, S. China.
- Stelmatogonum** Baill. Asclepiadaceae (II. 4). 1 Mexico.
- Stem**, the leaf-bearing part of the pl.; stem and leaf should always be described together for the sake of accuracy and conciseness. Stems may be *annual*, *biennial*, or *perennial*; *erect*, *climbing*, *twining*, *prostrate* or *procumbent*, *creeping*, *ascending* or *decumbent* (bending upwards from a prostrate base), *floating*, &c.; they may be *unbranched* (*simple*) or *branched* (describe mode of branching); if branched they may be *caespitose* (a tuft of shoots from the base, as in many grasses), *fastigiate* (many branches parallel to the stem, as in Lombardy poplar), or with *fascicles* (tufts) of lat. branches. The stem or branches may be a *corm*, *bulb*, *tuber*, *rhizome*, *runner*, *stolon*, *sucker*, *offset*, *phylloclade*, *tendrils*, &c. Adnation may occur, or long and short shoots; the stem may be a *monopodium* or a *sympodium*; it may be 'condensed' bearing 'radical' leaves, and run out into a *scape* bearing only the fls., as in dandelion. It may be *herbaceous* (not woody above ground), *woody*, *succulent* or *fleshy*; *solid*, *hollow* (*fistular* if herbaceous); *straight*, *flexuose* (zigzag) &c.; *cylindrical*, *terete* (cylindrical

tapering), *angular, ribbed, winged; smooth, prickly, warty, hairy* (cf. Leaf, for degrees of hairiness). Polymorphism, if any, form and texture of bud scales and bud, growth in thickness, size and habit, bark (*smooth, warty, hairy, &c.*), colour, &c., must also be described. Cf. Climbers, Xero., &c.

- Stemmadenia** Benth. Apocynaceae (I. 3). 8 trop. Am., W.I.
Stemmatella Wedd. ex Sch.-Bip. Compositae (5). 2 Boliv., Colomb.
Stemodia L. Scrophulariaceae (II. 6). 30 trop.
Stemodiopsis Engl. Scrophulariaceae (II. 6). 4 trop. Afr.
Stemona Lour. Stemonaceae. 10 Indomal., China, Japan.
Stemonacanthus Nees = *Ruellia* Plum. p.p. (Acanth.).
Stemonaceae (EP., *Roxburghiaceae* BH.). Monocots. (Liliiflorae; Coronarieae BH.). 3 gen., 12 sp., E. Ind., Am., Austr., &c. Perenn. herbs, often climbing, with axillary infls. of ♂ reg. fls. P 2+2 sepaloid, A 2+2, G (2) 1-loc. with 1 anat. ov. Caps. Chief gen. *Stemona*.
Stemonocoleus Harms. Leguminosae (II. 2). 1 Cameroons.
Stemonoporus Thw. (*Vateria* p.p. BH.). Dipterocarp. 15 Ceylon.
Stemonurus Blume (*Gomphandra* p.p. BH.). Icacinac. 12 Indomal.
Stemotria Wettst. et Harms. Scrophulariaceae (II. 2). 1 Peru.
Stenachaenium Benth. Compositae (4). 3 S. Brazil, Argentina.
Stenactis Cass. = *Erigeron* L. p.p. (Comp.).
Stenadenium Pax. Euphorbiaceae (A. II. 8). 1 E. Afr.
Stenandriopsis Sp. Moore. Acanthaceae (IV. B). 1 Madag.
Stenandrium Nees. Acanthaceae (IV. B). 20 warm Am.
Stenanthella Rydberg (*Stenanthium* p.p.). Liliaceae (1). 2 N. Am., E. As.
Stenanthemum Reiss (*Cryptandra* p.p. EP.). Rhamnaceae. 6 Austr.
Stenanthera Engl. et Diels. Anonaceae (4). 7 W. trop. Afr.
Stenanthium Kunth. Liliaceae (1). 5 N. Am., Saghalien.
Stenaria Rafin. = *Houstonia* L. p.p. (Rubi.).
Stenia Lindl. Orchidaceae (II. β. II.). 2 Guiana, Colombia.
Stenocalyx Berg. = *Eugenia* Mich. p.p. (Myrt.).
Stenocalyx Turcz. Malpighiaceae (inc. sed.). 1 Colombia.
Stenocarpa Blake. Compositae (5). 1 Mexico.
Stenocarpus R. Br. Proteaceae (II). 15 New Caled., E. Austr.
Stenocarpus (Lat.), narrow fruited.
Stenocereus Riccob. (*Cereus* p.p.). Cactaceae (III. 1). 1 Mexico.
Stenochilus R. Br. = *Eremophila* R. Br. (BH.) = *Pholidia* R. Br.
Stenochlaena J. Sm. Polypodiaceae. 12 trop.
Stenocline DC. Compositae (4). 11 Madag., Minas Geraes.
Stenocoryne Lindl. (*Bifrenaria* p.p.). Orchid. (II. 12). 10 S. Am.
Stenodiptera Koso-Poliansky. Umbelliferae (III. 6). 3 C. As.
Stenodon Naud. Melastomaceae (1). 2 S. Brazil.
Stenoglossum H. B. et K. Orchidaceae (II. 6). 1 Andes.
Stenoglottis Lindl. Orchidaceae (II. 1). 2 S. and trop. Afr.
Stenogyne Benth. Labiatae (III). 17 Hawaiian Is.
Stenolirion Baker (*Crinum* p.p. EP.). Amaryllidaceae (1). 1 trop. Afr.
Stenolobium D. Don (*Tecoma* p.p. BH.). Bignoniaceae (2). 4 Am.
Stenomeria Turcz. Asclepiadaceae (II. 1). 2 Colombia.

- Stenomeris** Planch. Dioscoreaceae. 3 Phil. Is., Borneo.
Stenomesson Herb. Amaryllidaceae (1). 20 trop. Am.
Stenonema Hook. (*Dolichostylis* BH.). Cruciferae (4). 1 Colombia.
Stenonia Baill. Euphorbiaceae (A. 1. 2). 1 Madag.
Stenoniella O. Ktze. = *Stenonia* Baill. (Euph.).
Stenopetalum R. Br. ex DC. Cruciferae (3). 8 S. and W. Austr.
Stenophragma Celak. Cruciferae (4). 10 N. temp.
Stenophyllus Rafin. (*Scirpus* p.p.). Cyperaceae (1). 2 N. Am.
Stenoptera C. Presl. Orchidaceae (II. 2). 4 trop. Am., W.I.
Stenorhynchus Rich. (*Spiranthes* p.p. BH.). Orchid. (II. 2). 20 trop. Am. Cult.
Stenosemia Presl. Polypodiaceae. 2 Malaya, Solomon Is.
Stenosiphon Spach. Onagraceae (2). 1 Texas.
Stenosiphonium Nees. Acanthaceae (IV. A). 5 Indomal.
Stenospermation Schott. Araceae (II). 21 trop. Am., sub-andine.
Stenostachys Turcz. (*Asperella* p.p. EP.). Gramineae (12). 1 N.Z.
Stenostelma Schlechter. Asclepiadaceae (II. 1). 1 Cape Colony.
Stenostephanus Nees. Acanthaceae (IV. B). 2 trop. S. Am.
Stenostomum Gaertn. f. = *Antirrhoea* Comm. (Rubi.).
Stenotaphrum Trin. Gramineae (5). 4 trop. and subtrop. *S. americanum* Schrank is useful for binding drift-sand (cf. *Ammophila*).
Stenothyrsus C. B. Clarke. Acanthaceae (IV. A). 1 Perak.
Stenotopsis Rydberg (*Aplopappus* p.p.). Compositae (3). 2 W. U.S.
Stenotus Nutt. (*Aplopappus* p.p.). Compositae (3). 6 N. Am.
Stenouratea Van Tiegh. Ochnaceae. 1 C. Am.
Stephanandra Sieb. et Zucc. Rosaceae (I. 1). 3 Japan, China.
Stephania Lour. Menispermaceae. 33 palaeotrop.
Stephanocoma Less. (*Berkheya* p.p. EP.). Compositae (10). 1 S. Afr.
Stephanodaphne Baill. Thymelaeaceae. 2 Madag., Comoros.
Stephanodoria Greene (*Xanthocephalum* p.p.). Compositae (3). 1 Mexico.
Stephanclepis Sp. Moore. Compositae (1). 1 trop. Afr.
Stephanomeria Nutt. Compositae (13). 15 W. N. Am.
Stephanopholis Blake (*Leptosyne* p.p.). Compositae (5). 1 Mexico.
Stephanophysum Pohl = *Ruellia* Plum. p.p. (Acanth.).
Stephanopodium Poepp. et Endl. Dichapetalaceae. 4 trop. S. Am.
Stephanorossia Chiov. Umbelliferae (III. 7). 1 E. trop. Afr.
Stephanostegia Baill. Apocynaceae (I. 3). 1 Madag.
Stephanostema K. Schum. Apocynaceae (inc. sed.). 1 Zanzibar.
Stephanotella Fourn. Asclepiadaceae (II. 3). 1 Brazil.
Stephanotis Thou. Asclepiadaceae (II. 3). 15 Madag., Malaya, Cuba. Cult. perf. fls.
Steppes, dry grassy plains, E. Eur., W. As.
Stera Ewart (*Pluchea* p.p.). Compositae (4). 3 W. Austr.
Sterculia L. Sterculiaceae. 100 trop. Fls. unisexual, apetalous.
Sterculiaceae (EP., BH.). Dicots. (Archichl. Malvales). 48 gen., 660 sp., chiefly trop. Trees, shrubs, or herbs, with alt. stip. l.; some are lianes. Fls. in complex cymes, ♂, usu. reg., 5-merous. K (5), valvate, with no epicalyx; C often absent or small, conv.; A in 2 whorls, the outer staminodial or o, the inner often branched, all ± united into a tube, anthers 2-loc.; G usu. (5), with 2—∞ anatr.

ovules in each, with the micropyle outwards; style simple, lobed. Fruit various, often a schizocarp. Endosperm. Cola and Theobroma (cacao) are economically important. *Chief genera*: Dombeya, Hermannia, Melochia, Buettneria, Theobroma, Helicteres, Sterculia, Cola.

Stereochlaena Hackel (*Chloridion* Stapf). Gramineae (5). 1 E. Afr.
Stereosandra Blume. Orchidaceae (II. 2). 1 Java.

Stereosanthus Franch. Compositae (8). 3 China.

Stereospermum Cham. Bignoniaceae (2). 12 trop. Afr., As.

Sterigma DC. Cruciferae (4). 6 C. As.

Steriphe Phil. (*Aplopappus* p.p.). Compositae (3). 1 Chili.

Steriphoma Spreng. Capparidaceae (II). 3 Trinidad to Peru.

Steris L. = *Hydrolea* L. (Hydrophyll.).

Sternbergia Waldst. et Kit. Amaryllidaceae (I). 12 E. Medit.

Sternotribe (fl.), dusting pollen on under side of visitor.

Sterrhium (Cl.), a moor formation.

Steudnera C. Koch. Araceae (VI). 5 Indomal.

Stevensia Poit. (*Rondeletia* p.p. *BH.*). Rubiaceae (I. 3). 1 Haiti.

Stevensonia J. Dunc. (*Phoenicophorium* *EP.*). Palm. (IV. 1). 1 Masc.

Stevia Cav. Compositae (2). 110 trop. and sub trop. Am.

Stewartia (*Stuartia*) L. Theaceae. 5 N. Am., Japan.

Stiburus Stapf. Gramineae (10). 2 S. Afr.

Stichoneuron Hook. f. Stemonaceae. 2 India, Malay Peninsula.

Stichorchis Thou. (*Liparis* *BH.*). Orchid. (II. 4). 40 As., Austr., Masc.

Stictocardia Hallier f. (*Ipomoea* p.p.). Convolv. (I). 3 Afr., Madag.

Stiffia Mikan (*Augusta* Leandr.). Compositae (12). 5 Brazil. Very large fls. (for Comp.). Shrubs. Cult. orn. fl. and fr.

Stigmamblys O. Ktze. = *Amblyostigma* Benth. (Asclep.).

Stigmanthus Lour. Rubiaceae (inc. sed.). 1 Cochin China.

Stigmatococca Willd. (*Ardisia* p.p. *EP.*). Myrsinaceae. 1 Panama.

Stigmatodactylus Maxim. ex Makino. Orchid. (II. 2). 2 Java, Japan.

Stigmatophyllon (*Stigmaphyllon*) A. Juss. Malpigh. (I). 50 trop. Am., W.I.

Stigmatorhynchus Schlechter. Asclepiadaceae (II. 1). 3 Afr.

Stilbanthus Hook. f. Amarantaceae (2). 1 Himalaya.

Stilbe Berg. Verbenaceae (2). 5 S. Afr.

Stilbocarpa A. Gray. Araliaceae (2). 1 N.Z. islands.

Stillingia L. Euphorbiaceae (A. II. 7). 15 Am., Polynes., Mascarenes.

[For *S. sebifera* Michx. see *Sapium*.]

Stilpnogyne DC. Compositae (8). 1 S. Afr.

Stilpnopappus Mart. ex DC. Compositae (1). 15 trop. S. Am.

Stilpnophyllum Hook. f. Rubiaceae (I. 5). 1 Peru.

Stilpnophytum Less. Compositae (7). 2 S. Afr. (karroo).

Stimpsonia Wright. Primulaceae. 2 Japan, China.

Stimulants, cf. Alcohol, Drinks.

Stinging hairs, *Girardinia*, *Lafortea*, *Loasaceae*, *Malpighiaceae*, *Urtica*.

Stinkwood, *Gustavia*, *Ocotea*, &c.; **-wort** (Austr.), *Inula graveolens*.

Stipa L. Gramineae (8). 120 trop. and temp., usu. xero. *S. pennata* L. (feather grass, Steppes) and others have l. which roll inwards when the air is dry, covering the stomata and green tissue (which are on the

upper side only) and exposing only the woody lower surface. The awn of the fr. is long, ending in a long feather, and hygroscopic, curling up when dry and uncurling when damp. The fr. is thin and sharply pointed, with backward-pointing hairs on the tip. As in *Erodium*, the awn when damped uncurls, and, if the point of the fr. be on the soil and the feather be entangled with other objects, drives the fr. into the soil. When the air dries the feather is drawn down, not the fr. up. *S. tenacissima* L. (N. Afr.) is the esparto grass, from which paper is extensively made.

Stipe, a stalk or leafstalk; **-itate**, on a special stalk.

Stipecoma Muell.-Arg. Apocynaceae (II. 1). 1 C. Brazil.

Stipel, a stipule of a leaflet.

Stiptanthus Briquet (*Anisochilus* p.p.). Labiatae (VII). 1 N. India.

Stipularia Beauv. Rubiaceae (I. 7). 3 W. trop. Afr.

Stipularia Delpino (*Thalictrum* p.p.). Ranunculaceae (3). 1 Himal.

Stipule, an outgrowth of the base of the l. (*q.v.*), usu. small, green, leafy; large, assimilating, in *Azara*, *Lathyrus Aphaca*, many *Rubiaceae* (esp. II. 11), *Viola*; scaly, aiding in bud protection (*q.v.*) in *Artocarpus*, *Magnolia*, &c.; repres. by hairs in *Anacampteros*, &c.; by tendrils in *Smilax*; by thorns in *Acacia*, *Machaerium*, *Paliurus*; **stipulate**, with stips.; **inter-** and **intra-petiolar**, *cf.* *Rubiaceae*.

Stipulicida (Rich.) Michx. Caryophyllaceae (I. 3). 1 S.E. N. Am.

Stirlingia Endl. (*Simsia* R. Br.). Proteaceae (I). 5 Austr.

Stironeurum Radlk. ex Willd. et Dur. Sapotaceae (I). 1 trop. Afr.

Stitchwort, *Stellaria*.

Stixis Lour. (*Koydsia* p.p. *BH.*). Capparidaceae (III). 6 S.E. As.

Stizolobium P. Br. = *Mucuna* Adans. p.p. (Legum.).

Stizophyllum Miers (*Bignonia* p.p. *BH.*). Bignoniaceae (I). 10 Braz

Stobaea Thunb. = *Berkheya* Ehrh. (Comp.).

Stock, *Matthiola incana* R. Br.; **Virginian-**, *Hesperis*.

Stocksia Benth. Sapindaceae (II). 1 Beluchistan.

Stoebe L. Compositae (4). 20 Bourbon, Madag., S. Afr.

Stokesia L'Hérit. Compositae (I). 1 S.E. U.S.

Stolidia Baill. Olacaceae. 1 Mauritius.

Stollaea Schlechter. Cunoniaceae. 1 New Guinea.

Stolon, a runner, *Pistia*.

Stolzia Schlechter. Orchidaceae (II. 9). 1 Nyassaland.

Stoma, a breathing pore.

Stomatostemma N. E. Br. (*Cryptolepis* p.p. *EP.*). Asclepiadaceae (I). 1 trop. Afr.

Stonecrop, *Sedum*; **- pine**, *Pinus Pinea* L.

Stool, a pl. from which offsets may be taken, or with several stems arising together.

Stopper (Am.), *Eugenia*.

Storage of reserves in pl. may take place in any part, most often below ground, often in the stem in trees or shrubs, and always in the seed; *cf.* Edible products.

Storax, *Liquidambar*, *Styrax*.

Storckiaella Seem. Leguminosae (II. 5). 2 Fiji, New Caled.

Stork's bill, *Erodium*.

Stormia Sp. Moore (*Hexalobus* p.p.). Anonaceae (I). 1 S.W. Brazil.

Storthocalyx Radlk. Sapindaceae (I). 4 New Caled.

Stracheya Benth. Leguminosae (III. 7). 1 Tibet.

Stramineus (Lat.), straw-coloured.

Stramonium Tourn. ex Hall. = *Datura* L. p.p. (Solan.).

Stranvaesia Lindl. Rosaceae (II). 7 Himalaya, China.

Strapwort, *Corrigiola*.

Strasburg turpentine, *Abies pectinata* DC.

Strasburgeria Baill. Ochnaceae (Ternstr. *BH.*). 1 New Caled.

Stratiotes L. Hydrocharitaceae. 1 Eur. (incl. Brit.). *S. aloides* L. (water soldier). Short stem bearing roots and a number of aloë-like l. with toothed edges. In the summer it floats up to the surface and bears the (dioec.) fls. It sinks in autumn. It gives off numerous axillary shoots with big buds at the ends, and these grow into young plants, which become free and sink to the bottom, where they remain over winter.

Straussia A. Gray. Rubiaceae (II. 5). 5 Hawaiian Is.

Straussiella Hausskn. Cruciferae (4). 1 Persia.

Stravadium Juss. = *Barringtonia* Forst. p.p. (Lecyth.).

Strawberry, *Fragaria vesca* L.; -**tomato**, *Physalis*; -**tree**, *Arbutus*.

Streblacanthus O. Ktze. Acanthaceae (IV. B). 3 C. Am.

Streblorrhiza Endl. Leguminosae (III. 6). 1 Norfolk I.

Streblosa Korth. (*Psychotria* p.p.). Rubiaceae (II. 5). 4 Malaya.

Streblosiopsis Valet. Rubiaceae (inc. sed.). 1 Borneo.

Streblus Lour. Moraceae (I). 1 Indomal., used for paper in Siam.

Streltizia (Banks) Ait. Musaceae. 5 S. Afr., cult. orn. fl. Fls. in cincinnus in axil of large spathe. Sepals free; the lat. petals united, irreg., enclosing the 5 sta.

Strempeleopsis Benth. Apocynaceae (I. 3). 2 Cuba, Jamaica.

Strephonema Hook. f. Combretaceae (Lythr. *BH.*). 2 W. trop. Afr.

Streptanthera Sweet. Iridaceae (III). 2 S. Afr.

Streptanthus Nutt. Cruciferae (I). 25 Pacif. N. Am.

Streptocalyx Beer. Bromeliaceae (4). 5 trop. Am.

Streptocarpus Lindl. Gesneriaceae (I). 30 Afr., Madag. (Cape primrose). In *S. polyanthus* Hook., &c., the embryo in the exalbum. seed has 2 cots. and a hypocotyl, but no plumule or radicle; the hypocotyl enters the soil, swells up at the end and develops absorbent hairs; presently however roots (adv.) form above the swelling, which dies off. One of the cots. continues to grow, while the other dies. Thus the young pl. consists of a large green cot. with few adv. roots. The cot. continues to grow, and reaches considerable size. Finally the infl. arises as a bud from the base of the petiole, and leafy shoots may also arise. (Cf. the artificial repr. of *Sinningia*.)

Streptocaulon Wight et Arn. Asclepiad. (I). 7 Indomal. G semi-inf.

Streptochaeta Schrad. Gramineae (6). 2 Brazil, Ecuador.

Streptogyne Beauv. Gramineae (10). 2 trop.

Streptolirion Edgew. Commelinaceae. 2 Himal., China.

Streptoloma Bunge. Cruciferae (4). 1 Turkestan.

Streptomanes K. Schum. Asclepiadaceae (I). 1 New Guinea.

Streptopetalum Hochst. Turneraceae. 2 trop. E. Afr.

Streptopus Michx. Liliaceae (VII). 5 N. temp.

- Streptosolen** Miers. Solanaceae (5). 1 trop. S. Am. Cult. orn. fl.
- Streptothamnus** F. Muell. Flacourtiaceae (5). 3 New S. Wales.
- Streptotrachelus** Greenm. Apocynaceae (II. 1). 1 Mexico.
- Striate**, with fine || lines.
- Stricklandia** Baker. Amaryllidaceae (1). 1 Ecuador.
- Strictus** (Lat.), very straight.
- Striga** Lour. Scrophulariaceae (III. 2). 22 palaeotrop., and S. Afr.
Semiparasites like *Rhinanthus*.
- Strigilia** Cav. = *Styrax* L. (Styrac.).
- Strigina** Engl. Scrophulariaceae (III. 2). 1 C. Afr.
- Strigose**, with appressed stiff hairs or bristles.
- Stringy bark**, *Eucalyptus*.
- Strobidia** Miq. (*Alpinia* p.p.). Zingiberaceae (1). 1 Sumatra.
- Strobila** Nor. Inc. sed. Nomen.
- Strobilacanthus** Griseb. Acanthaceae (IV. B). 1 Panama.
- Strobilanthes** Blume (*Goldfussia* Nees). Acanthaceae (IV. A). 200 trop. As., Madag. Many occur gregariously in vast numbers, forming almost the sole undergrowth in forests. They fl. simultaneously and die down. Some, e.g. *S. anisophyllus* T. Anders., show marked anisophyly. The stigma is sensitive to contact (cf. *Mimulus*); when touched it moves downwards, and becomes pressed against the lower lip of the fl. Many cult. orn. fl.
- Strobilanthesis** Sp. Moore. Acanthaceae (IV. A). 1 Rhodesia.
- Strobile, strobilus**, *Lycopodium*.
- Strobilopanax** R. Viguier (*Meryta* p.p.). Araliaceae (1). 2 New Caled.
- Strobopetalum** N. E. Br. Asclepiadaceae (II. 1). 2 Arabia.
- Stroganowia** Kar. et Kir. Cruciferae (2). 3 C. As.
- Stromanthe** Sond. Marantaceae. 8 trop. S. Am.
- Stromatopteris** Mett. Gleicheniaceae. 1 New Caledonia.
- Strombosia** Blume. Olacaceae. 10 trop. Afr., Indomal.
- Strombosiopsis** Engl. Olacaceae. 1 Cameroons.
- Strongylodon** Vog. Leguminosae (III. 10). 8 Madag., Indomal.
- Strong man's weed** (W.I.), *Petiveria*.
- Strongylomopsis** Spegazz. Compositae (inc. sed.). 1 Fuegia.
- Strophacanthus** Lindau (*Dianthera* p.p.). Acanth. (IV. B). 2 Indomal.
- Strophanthin, Strophanthus**.
- Strophanthus** DC. Apocynaceae (II. 1). 28 Cape Col. to China.
Free parts of petals long, threadlike; follicles divergent when ripe.
The seeds of *S. hispidus* DC. (S. Afr.) furnish the drug strophanthin.
- Strophoblachia** Boerlage. Euphorbiaceae (A. II. 4). 1 Celebes.
- Strophiole**, caruncle.
- Strophocactus** Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 1 Brazil.
- Stropholirion** Torr. Liliaceae (IV). 1 Calif.
- Strumaria** Jacq. Amaryllidaceae (1). 6 Cape Colony.
- Strumpfia** Jacq. Rubiaceae (II. 4). 1 W.I.
- Struthanthus** Mart. (*Loranthus* p.p. B.H.). Loranth. (1). 45 trop. Am.
- Struthiola** L. Thymelacaceae. 24 S. and trop. Afr.
- Struthiopteris** Weis. = *Blechnum* L. (Polypod.).
- Strychnine, Strychnos**.
- Strychnopsis** Baill. Menispermaceae. 1 Madag.

- Strychnos** L. Loganiaceae. 200 trop. Some, e.g. *S. Nux-vomica* L. (India, Ceylon), are erect trees, others are climbing shrubs, with curious hook-tendrils. The hook is a modified axillary shoot; the l. in whose axil it arises usu. becomes a scale l. If the hook catch upon a support it twines close round it and thickens and lignifies (*cf.* Clematis). Other sp. have axillary thorns. A few have a 1-loc. ovary with free-central placenta. Fr. a berry; the flesh is harmless, but the seeds are exceedingly poisonous, owing to the presence of strychnine in the seed-coats. From these seeds the alkaloid is chiefly obtained. *S. toxifera* Schomb. (S. Am.) yields the famous wourali or curare poison, with which the S. Am. Indians poison their arrows; it is obtained from the bark by scraping and maceration in water. The seeds of *S. potatorum* L. f. (clearing nut) are used to purify dirty water for drinking. They are rubbed on the inside of the vessel, and cause precipitation.
- Stryphnodendron** Mart. Leguminosae (I. 4). 10 trop. Am.
- Stuartia** (*Stewartia*) L. Theaceae. 5 N. Am., Japan.
- Stuartina** Sond. Compositae (4). 1 S. Austr.
- Stubendorffia** Schrenk. Cruciferae (2). 1 C. As.
- Stuckenia** Börner = Potamogeton p.p. (Potam.).
- Stuckertia** O. Ktze. = Choristigma F. Kurtz (Asclep.).
- Stuckertiella** Beauverd. Compositae (4). 2 Argentina.
- Stuebelia** Pax. Capparidaceae (II). 1 Colombia.
- Stuhlmannia** Taub. Leguminosae (II. 5). 1 trop. E. Afr.
- Sturmia** Rehb. (*Liparis* B.H.). Orchidaceae (II. 3). 1 Eur., N. Am.
- Styasasia** Sp. Moore (*Isochoriste* p.p.). Acanthaceae (N.B.). 1 trop. Afr.
- Stylarthropus** Baill. (*Whitfieldia* Hook.). Acanth. (IV. A). 6 trop. Afr.
- Style**, *cf.* Ovary; -**opodium**, enlarged base of style.
- Stylidiaceae** (*Candolleaceae*) (*EP.*, *BH.*). Dicot. (Sympet. Campanulatae; Campanales *BH.*). 3 gen., 100 sp., Austr., N.Z., S. Am., trop. As. Small herbs or undershrubs, ± xero., without latex. L. simple, exstip., almost grass-like, often in rad. rosettes with fls. on a scape; successive rosettes may be separated by a slightly leafy piece of stem. Rosettes sometimes almost bulbous, with aerial roots. Fls. in racemes or cymes, ♂ or unisex., usu. +. K 5 or (5), odd sep. post.; C (5), the ant. pet. (*labellum*) often different from the rest; A 2 (post. lat.), rarely 3, united with style to form a gynostemium (*cf.* Orchidaceae, Asclepiadaceae), anthers extr.; $\bar{G}$ (2), usu. 2-loc., but sometimes the post. loc. aborted. Caps.; fleshy endosp. *Gen.* Levenhookia, Phyllachne, Stylium.
- Stylidiaceae** (*BH.*) = Stylidiaceae.
- Stylium** Lour. = Alangium Lam. (Alang.).
- Stylidium** Sw. (*Candollea* Labill.). Stylidiaceae. 85 Austr., N.Z., E. As. Some have irritable gynostemium. It bends over to one side, and may be released by a touch, when it springs over to the other. These periodic movements go on for some time (*cf.* nutation).
- Stylisma** Rafin. (*Breweria* p.p.). Convolv. (I). 5 Am., As., Austr.
- Stylobasium** Desf. Rosaceae (VI. a). 3 S.W. Austr.
- Styloceras** Juss. Buxaceae. 3 trop. Andes.
- Stylochiton** Lepr. Araceae (VII). 10 C. Afr., Natal. The monoec. infl. remains below the ground, only the tip protruding and opening.

- Stylocline** Nutt. Compositae (4). 3 W. U.S., Afghanistan.
- Styloconus** Baill. (*Blancoa* Lindl.). Amaryllid. (III). 1 S.W. Austr.
- Stylocoryna** Cav. = *Randia* Houst. (Rubi.).
- Stylocoryne** Wight et Arn. (*Tarenna* BH.). Rubi. (II. 4). 15 Indomal.
- Stylogyne** A. DC. (*Artisia* p.p. BH.). Myrsin. 40 trop. S. Am., W.I.
- Styloma** O. F. Cook (*Pritchardia* p.p.). Palmae (I. 2). 16 Polynesia.
- Stylophorum** Nutt. Papaveraceae (II). 1 Atl. N. Am., 1 E. As.
- Stylophyllum** Britton et Rose (*Cotyledon* p.p.). Crass. 12 Calif.
- Stylosanthes** Sw. Leguminosae (III. 7). 25 trop. and subtrop.
- Stylosiphonia** T. S. Brandegee. Rubiaceae (I). 1 Mexico.
- Stypandra** R. Br. Liliaceae (III). 3 temp. Austr.
- Styphelia** Sm. (incl. *Cyathodes* Labill., *Leucopogon* R. Br.). Epacridaceae. 175 Austr., N.Z., New Caled., Sandwich Is., Malaya.
- Styracaceae** (EP., BH. incl. *Symplocaceae*). Dicot. (Sympet. Ebenales). 6 gen., 73 sp., 3 centres of distribution—Brazil to Peru and Mexico, Virginia to Texas, Japan to Java. A single sp., *Styrax officinalis*, is Mediterranean. Shrubs and trees with alt. simple l., usu. entire and often leathery. Infl. usu. racemose, with no bracteoles. Fl. ♂, reg. K (5—4); C (5—4), often nearly polypetalous; A twice as many as petals, in one whorl, united at base or into a tube, with narrow or linear, rarely round anthers; G (3—5), 3—5-loc. below, 1-loc. above, with 1 or few pend. anatrop. ov. in each loc.; style simple, stigma capitate or lobed. Fr. drupaceous, with fleshy or dry dehiscent pericarp, and one or few seeds. Embryo straight, in endosp. Chief genera: *Halesia*, *Styrax*. For distinction between S. and *Symplocaceae*, see the latter. The absence of latex distinguishes S. from *Sapotaceae*, the ♂ fls. from *Ebenaceae*.
- Styrax** (Tourn.) L. *Styracaceae*. 100 with distr. of fam. *S. officinale* L. yields storax, a resin much used in ancient times. *S. Benzoin* Dryand. (Sumatra, &c.) yields the fragrant resin gum-benzoin, used medicinally and for incense.
- Suaeda** Forsk. *Chenopodiaceae* (B). 40 cosmop., on sea-coast, and in salt steppes. *S. maritima* Dum. (sea-blite) in Brit. Herbs with fleshy l. and dense cymes.
- Suaveolens** (Lat.), fragrant.
- Sub-** (Lat. pref.), under, below, nearly; -genus, -family, -order, &c., cf. Nomenclature; -terranean fr., *Amphicarpaea*, *Arachis*, *Trifolium*, *Voandzeia*; -tropical, the warmest part of temp. zone.
- Suberization**, conversion into cork.
- Subularia** Ray ex L. *Cruciferae* (2). 1 Abyss., 1 Eur. (incl. Brit.), As., N. Am., *S. aquatica* L., the awl-wort, at the margin of lakes, usu. submerged, with long narrow l., nearly circular in section. The fls. may project and open, or remain submerged and fert. themselves in the bud. One of the few aquatic annuals.
- Subulate**, awl-shaped.
- Succineus** (Lat.), amber coloured.
- Succisa** Neck. (*Scabiosa* p.p. BH.). *Dipsacaceae*. 4 Medit., Eur.
- Succisus** (Lat.), abruptly broken off.
- Succory**, chicory, *Cichorium Intybus* L.
- Succowia** Medic. *Cruciferae* (2). 1 W. Medit., Teneriffe.
- Succulence**, cf. *Xerophytes*.

- Suchtelenia** Karel ex Meissn. Boraginaceae (IV. 1). 1 Caspian.
Sucker, a shoot arising below ground, a new shoot on an old stem, - of **parasites**, the modified root by which they absorb from hosts.
Suckleya A. Gray. Chenopodiaceae (A). 1 Rocky Mts.
Suffruticose herb, with base of stem woody, as in wallflower.
Sugar, one of the most important reserve carbohydrates, esp. obtained from *Saccharum officinarum* L. and *Beta vulgaris* L. var. *Rapa* Dumort, also from *Acer*, *Borassus*, *Caryota*, and many palms, *Sorghum*, &c. Cf. Willis, *Agriculture in the Tropics*; - **apple**, *Anona squamosa* L.; - **bean**, *Phaseolus lunatus* L.; - **beet**, *Beta vulgaris* L. var. *Rapa* Dumort; - **berry** (Am.), *Celtis*; - **cane**, *Saccharum officinarum* L.; - **maple**, *Acer saccharum* Marshall; **palm**-, *Arenga*, *Borassus*, *Caryota*, *Cocos*, &c.; - **pine**, *Pinus Lambertiana* Dougl.
Suksdorfia A. Gray. Saxifragaceae (I). 3 temp. Am.
Sulcate, furrowed.
Sullivantia Torr. et Gray. Saxifragaceae (I). 2 U.S.
Sulphur root, *Peucedanum officinale* L.
Sumac, *Rhus*; **West Indian** - (W.I.), *Brunellia*.
Sumatra camphor, *Dryobalanops aromatica* Gaertn. f.
Sumbavia Baill. Euphorbiaceae (A. II. 2). 2 E. Indomal.
Sumbaviopsis J. J. Smith. Euphorbiaceae (A. II. 2). 1 Malaya.
Summer grape, *Vitis aestivalis* Michx.; - **savoury**, *Satureia*.
Sumnera Nieuwland (*Thalictrum* p.p.). Ranunculaceae (3). 1 N. Am.
Sun dew, *Drosera*; - **drops** (Am.), *Oenothera fruticosa* L.; - **flower**, *Helianthus annuus* L.; --, **dwarf**, *Actinella*; --, **Mexican**, *Tithonia diversifolia* A. Gray.
Sunaptea Griff. = *Vatica* L. p.p. (Diptero.).
Sunipia Buch.-Ham. ex Sm. Orchidaceae (II. 16). 1 Himalaya, Burma.
Sunn hemp, *Crotalaria juncea* L.
Superior (ovary), above sta., &c. on recept. (cf. Ovary).
Super-, supra- (Lat. pref., over, above); - **posed**, vertically over; - **volute**, convolute.
Supinus (Lat.), lying face upwards.
Supple-jack (W.I.), *Paullinia*.
Suppression, complete absence of organ where one expects to find it.
Surculus (Lat.), a sucker.
Surette (W.I.), *Byrsonima*.
Suriana Plum. ex L. Simarubaceae. 1 trop. coasts.
Surinam poison (W.I.), *Tephrosia*.
Suringaria Pierre (*Barringtonia* p.p. EP.). Lecythid. 1 Cambodia.
Suspensor, *Selaginella*.
Susum Blume. Flagellariaceae. 2 Indomal.
Sutera Roth. (*Chaenostoma* p.p.). Scrophular. (II. 5). 115 Afr.
Sutera DC. = *Psychotria* L. (Rubi.).
Sutherlandia R. Br. Leguminosae (III. 6). 1 S. Afr.
Sutrina Lindl. Orchidaceae (II. 19). 1 Peru.
Suttonia Hook. f. Myrsinaceae (II). 15 New Zealand, Hawaiian Is.
Suture, line of junction.
Svida Opiz (*Cornus* p.p. BH.). Cornaceae. 8 N. Am.
Svitramia Cham. Melastomaceae (I). 1 S. Brazil.

- Swainsona** Salisb. Leguminosae (III. 6). 30 Austr., N.Z., N. As.
Swamp cypress, *Taxodium*.
Swartzia Schreb. (*Tounatea* EP.). Legum. (II. 9). 65 trop. Am., Afr.
Swede turnip, *Brassica campestris* L., var.
Sweertia L. = *Swertia* L. (Gentian.).
Sweet bark, Cascarilla bark; - **basil**, *Ocimum basilicum* L.; - **bay**, *Laurus nobilis* L.; - **briar**, *Rosa rubiginosa* L.; - **calabash**, *Passiflora maliformis* L.; - **cicely**, *Myrrhis odorata* Scop.; - **clover** (Am.), *Melilotus*; - **cumin**, *Pimpinella Anisum* L.; - **cup**, *Passiflora edulis* Sims.; - **fern**, *Myrica asplenifolia* L.; - **flag**, *Acorus Calamus* L.; - **gale**, *Myrica Gale* L.; - **gum**, *Liquidambar*; - **leaf** (Am.), *Symplocos*; - **lime**, *Citrus Medica* L. var. *Limetta*; - **maudlin**, *Achillea Ageratum* L.; - **pea**, *Lathyrus odoratus* L.; - **potato**, *Ipomoea Batatas* Lam.; - **sop**, *Anona squamosa* L.; - **sultan**, *Centaurea moschata* L., &c.; - **vernal grass**, *Anthoxanthum odoratum* L.; - **William**, *Dianthus barbatus* L.; - **wood** (W.I.), *Nectandra*, &c.
Sweetia Spreng. Leguminosae (III. 1). 10 S. Am.
Sweetopsis Chodat et Hassl. (*Riedeliella* EP.). Leguminosae (III. 1). 1 Paraguay.
Swertia L. Gentianaceae (I). 90 cosmop., exc. Afr. *S. perennis* L. often cult. The corolla-segments bear each 2 nectaries on the upper side, consisting of little pits covered with hairs.
Swertopsis Makino. Gentianaceae (I). 1 Japan.
~~**Swietenia**~~ Jacq. Meliaceae (II). 3 trop. Am., W.I., incl. *S. Mahagoni* Jacq., the mahogany, a valuable timber tree. Cf. *Tropenpflanzen*, xv. 479.
Swinburnia Ewart (*Zysonia* p.p.). Compositae (4). 1 Austr.
Swine cress (Am.), *Senebiera*.
Swintonia Griff. Anacardiaceae (I). 8 Malaya. Pets. form wings to fr.
Sword bean, *Canavalia ensiformis* DC.; - **sedge**, *Lepidosperma*.
Swynnerton Sp. Moore. Asclepiadaceae (II. 3). 1 Rhodesia.
Syagrus Mart. = *Cocos* L. p.p. (Palm.).
Sycamore, *Acer pseudoplatanus* L.
Sychnosepalum Eichl. (*Sciadotaenia* Miers). Menispermaceae. 2 N. trop. S. Am.
Sycocarpus Britton. Meliaceae (III). 1 S. Am.
Sycamore fig, *Ficus Sycomorus* L.
Syconium, a fig fruit.
Sycopsis Oliv. Hamamelidaceae. 5 Khasias to China.
Sylitra E. Mey. Leguminosae (III. 6). 2 W. and S. Afr.
Sylvestris (Lat.), growing in woods.
Sym- (Gr. pref.), with, together, &c.; - **biosis**, *Cecropia*, Myrmecophily; - **metry**, cf. Actinomorphic, Zygomorphic, Asymmetrical, Enantio-styly, &c.; - **petalous**, with concrescent C; - **physis**, coalescence; - **podium**, a shoot in which the successive lat. branches in turn supersede the relatively main axis, which turns off to one side and looks like a branch, *Acorus*, *Aglaonema*, *Anthurium*, *Araceae*, *Eichhornia*, *Iridaceae*, *Liliaceae*, *Juncus*, *Narthecium*, *Orchidaceae*, *Peperomia*, *Ulmaceae*, *Vitis*, &c. And cf. Syn-.
Symbegonia Warb. Begoniaceae. 4 New Guinea.

- Symbolanthus** G. Don (*Lisianthus* BH.). Gentianaceae (I). 12 Andes.
- Symbryon** Griseb. Piperaceae. 1 Cuba.
- Symmeria** Benth. et Hook. f. Polygonaceae (III. 2). 2 trop. S. Am., W. Afr.
- Sympagma** Bunge. Chenopodiaceae (B). 1 C. As.
- Sympetalae** (EP.). The higher division of Dicotyledons.
- Sympetalandra** Stapf. Leguminosae (II. 1). 1 Malaya.
- Sympetaleia** A. Gray. Loasaceae. 2 Lower California.
- Symphipappus** Klatt (*Cadiscus* EP.). Compositae (6). 1 S. Afr.
- Symphocoronis** A. Gray = *Scyphocoronis* A. Gray (Comp.).
- Symphonia** L. f. Guttiferae (v). 6 Madag., trop. Am., Afr.
- Symphorema** Roxb. Verbenaceae (6). 3 Indomal.
- Symphoria** Pers. = *Symphoricarpos* Dill. (Caprif.).
- Symphoricarpos** Dill. ex Juss. Caprifoliaceae. 8 N. Am. *S. racemosus* Michx. (snowberry) cult. orn. shrub. The pend. fl. is fert. chiefly by wasps.
- Symphyandra** A. DC. Campanulaceae (I). 8 E. Medit. The pend. caps. opens at the base (*cf.* Campanula).
- Symphyecarpon** Pohl. Inc. sed. Nomen.
- Symphyllia** Baill. (*Adenochlaena* BH.). Euphorb. (A. II. 4). 2 India.
- Symphylocarpus** Maxim. Compositae (4). 1 Manchuria.
- Symphyloclamys** Gürke. Malvaceae (4). 1 E. trop. Afr.
- Symphylophyton** Gilg. Gentianaceae (I). 1 Brazil.
- Symphyoloma** C. A. Mey. (*Heracleum* p.p. BH.). Umbellif. III. 6. 1 Caucasus.
- Symphyonema** R. Br. Proteaceae (I). 2 New S. Wales.
- Symphyopappus** Turcz. Compositae (2). 5 campos of S. Brazil.
- Symphyostemon** Miers. Iridaceae (II). 5 S. Am.
- Symphytonema** Schlechter. Asclepiadaceae (I). 1 Madag.
- Symphytosiphon** Harms. Meliaceae (III). 1 Madag.
- Symphytum** Tourn. ex L. Boraginaceae (IV. 3). 15 Medit., Eur. *S. officinale* L. (comfrey) and *S. tuberosum* L., with tubers like those of potato, in Brit. The pend. fl. is bee-visited; the entrance to the honey is narrowed by the C scales. Mech. of fl. as in Borago. Some cult. fodder, *e.g.* *S. asperrimum* Donn.
- Sympieza** Licht. ex Roem. et Sch. Ericaceae (IV. 2). 9 Cape Colony.
- Symplectochilus** Lindau (*Adhatoda* p.p.). Acanth. (IV. B). 2 Madag., Afr.
- Sympleura** Miers. Inc. sed. Nomen.
- Symplocaceae** (EP.; *Styracaceae* p.p. BH.). Dicots. (Sympet. Ebenales). Only genus *Symplocos* (q.v.). The chief distinction from *Styracaceae* is the inf. ov. of *Symplocos* and its complete division into loc.; the shape of the anthers is also different, and the sta. often more numerous.
- Symplocarpus** Salisb. Araceae (III). 1, *S. foetidus* Nutt., the skunk-cabbage, Japan, E. As., Atl. N. Am.
- Symplocos** Jacq. The only genus of *Symplocaceae* (q.v.). 290 trop. and subtrop. Shrubs and trees with alt. simple exstip. leathery l., and racemed bracteolate ♂ reg. fls. K (5), imbr.; C (5) or (5 + 5), imbr.; A 5 or 5 + 5 or 5 + 5 + 5 or more, epipet. or free of C; anthers round or ovate; G (2—5), inf. or semi-inf., with 2—4 anatr. pend. ov. on

an axile plac. in each loc. Style simple, stigma capitate or lobed. Fr. drupaceous, one seed in each loc. of the stone. Embryo straight or curved, in endosp.

Syn- (Gr. pref.; cf. sym-), with, together; **-andrium**, a concrescence of sta. including anthers. *Araceae*, *Ariopsis*, *Dieffenbachia*, *Cucurbitaceae*, *Cyclanthera*, *Phyllanthus*, *Pistia*; **-androdium**, a concrescence of stds., *Araceae*; **-androus**, with united sta.; **-angium**, a concrescence of sporangia, *Murattiaceae*, *Psilotaceae*; **-carpous**, with concrescent cpls.; **-genesious** (anthers), united, *Compositae*, *Goodeniaceae*; **-onym**, a name no longer used, but indicating the same pl. as the one in use, e.g. *Caprificus* Gasp. for *Ficus* Tourn. Cf. also Sym-.

Synadenium Boiss. in DC. Euphorbiaceae (A. II. 8). 6 Afr., Madag., Masc.

Synallodia Rafin. Gentianaceae (nomen). 1 Japan.

Synandra Nutt. Labiatae (VI). 1 U.S.

Synandrodaphne Gilg. Thymelaeaceae. 1 Cameroons.

Synandrodaphne Meissn. (*Nectandra* p.p. EP.). Lauraceae (I). 1 Colombia.

Synandrospadix Engl. Araceae (VII). 1 N. Argentina.

Synanthae. The 6th order of Monocots.

Synantherias Schott (*Amorphophallus* EP.). Araceae (IV). 1 S. Ind., Ceyl.

Synaphea R. Br. Proteaceae (I). 8 W. Austr.

Synapsis Griseb. Scrophulariaceae (II. 4). 1 Cuba.

Synaptanthe Hook. f. Rubiaceae (I. 2). 1 subtrop. Austr.

Synaptolepis Oliv. Thymelaeaceae. 3 E. trop. Afr.

Syncarpia Tenore. Myrtaceae (II. 1). 2 E. Austr.

Syncephalanthia Bartl. Compositae (6). 1 C. Am.

Syncephalum DC. Compositae (4). 1 Madag.

Synchodendron Boj. ex DC. Compositae (4). 1 Madag.

Synchoriste Baill. Acanthaceae (IV. B). 1 Madag.

Synclisia Benth. Menispermaceae. 1 trop. W. Afr.

Syncolostemon E. Mey. Labiatae (VII). 10 S. Afr.

Syndechites (*Syndechites*) Oliv. Apocynaceae (II. 1). 1 S.W. China.

Syndesmanthus Klotzsch (*Simocheilus* K.). Ericac. (IV. 2). 20 S. Afr.

Syndiclis Hook. f. Lauraceae (II). 1 Bhotan.

Syndyophyllum Laut. et K. Schum. Euphorbiaceae (A. II. 5). 2 New Guinea.

Synechanthus H. Wendl. Palmae (IV. 1). 3 trop. Am.

Synedrella Gaertn. Compositae (5). 2 trop. Am.

Synedrellopsis Hiern et O. Ktze. Compositae (5). 1 Argentina.

Synelcosciadium Boiss. (*Tordylium* p.p. BH.). Umbell. (III. 6). 1 Syria.

Synepilaena Baill. Gesneriaceae (II). 1 Colombia.

Syngonanthus Ruhl. Eriocaulonaceae. 80 S. Am., Afr.

Syngonium Schott. Araceae (VI). 10 W.I., trop. Am. Climbers with cymes of monoec. spadices. Synandrous.

Syngramma J. Sm. Polypodiaceae. 16 trop. As., Polynesia.

Synima Radlk. Sapindaceae (I). 1 Austr.

Synisoos Baill. Rubiaceae (I. 8). 1 Brit. Guiana.

Synnema Benth. (*Cardanthera* EP.). Acanthaceae (IV. A). 12 palaeotrop.

Synnotia Sweet. Iridaceae (III). 3 S. and trop. Afr.

Synoum A. Juss. Meliaceae (III). 2 Austr.

Synsepalum Baill. (*Sideroxylon* p.p.). Sapotaceae (I). 1 W. trop. Afr.

Synsiphon Regel (*Colchicum* p.p. BH.). Liliaceae (I). 1 C. As.

Syntherisma Walt. (*Panicum* p.p.). Gramineae (5). 15 N. Am.

Synthlipsis A. Gray. Cruciferae (3). 2 Mexico, Texas.

Synthyris Benth. in DC. Scrophulariaceae (III. 1). 8 Mts., W. N. Am.

Syntriandrum Engl. Menispermaceae. 3 W. trop. Afr.

Syntrichopappus A. Gray. Compositae (6). 2 S.W. U.S.

Syrenia Andr. ex DC. (*Erysimum* p.p. EP.). Crucif. (4). 4 N. As., E. Eur.

Syrenopsis Jaub. et Spach (*Iberidella* BH.). Cruciferae (4). 1 E. Medit.

Syringa L. Oleaceae. 10 Eur., As. *S. vulgaris* L. is the lilac, cult. in Brit. Serial accessory buds in axils. Well-marked false dichotomy; the term. bud usu. fails to develop each spring and the two nearest lat. buds continue the growth. Winter buds scaly; the scales secrete a gummy substance as the bud elongates. Fls. in panicles, each branch with a term. fl. Seeds flat, slightly winged.

Syringa Tourn. ex Adans. = *Philadelphus* Riv. (Saxifr.).

Syringodea D. Don = *Erica* Tourn. p.p. (Eric.).

Syringodea Hook. f. Iridaceae (1). 3 Cape Colony.

Syrrhonema Miers. Menispermaceae. 2 W. trop. Afr.

Syrtidium (Cl.), a dry sandbar formation.

Systematic Botany, the study of the relationships of plants.

Systemonodaphne Mez (*Goeppertia* p.p.). Lauraceae (II). 1 Guiana.

Syzygium Gaertn. (*Eugenia* p.p. BH.). Myrtaceae (I). 140 palaeotrop.

Szechenyia Kanitz (*Lloydia* p.p. EP.). Liliaceae (V). 1 China.

Szovitsia Fisch. et Mey. Umbelliferae (III. 5). 2 W. As.

Tabascina Baill. Acanthaceae (IV. B). 1 Mexico.

Tabashir, cf. Bamboos.

Tabebuia Gomez. Bignoniaceae (2). 10 trop. Am., W.I.

Taberna Miers (*Tabernaemontana* p.p.). Apocyn. (I. 3). 7 W.I., S. Am.

Tabernaemontana Plum. ex L. Apocynaceae (I. 3). 50 trop. Am.

Tabernanthe Baill. Apocynaceae (I. 3). 6 W. trop. Afr.

Tabescent, wasting, shrivelling.

Tabraca Nor. Anonaceae. Nomen.

Tabular, flattened horizontally.

Tacamahac, *Calophyllum*, *Populus*.

Tacazzea Decne. Asclepiadaceae (I). 10 trop. Afr.

Tacca Forst. Taccaceae. 15 trop. Creeping tuberous rhiz. bearing large branched l. on long stalks, and cymose umbels of fls. on scapes. P 3 + 3, reg.; A 3 + 3; G (3), 1 loc. with parietal plac. and ∞ anat. ov. Style short, with 3 branches petaloid above, each 2-lobed with the stigmas on under sides. Berry. East Indian arrowroot is made from the rhiz. of *T. pinnatifida* Forst. and other sp.

Taccaceae (EP., BH.). Monocots. (Liliiflorae; Epigynae BH.). 2

gen., *Tacca* (q.v.) and *Schizocapsa* (fr. a caps.). A difficult fam. to place.

Taccada pith, *Scaevola*.

Taccarum Brongn. Araceae (VII). 3 Brazil.

Tachia Aubl. Gentianaceae (I). 3 Guiana, Brazil.

Tachiadenus Griseb. Gentianaceae (I). 7 Madag.

Tachibota Aubl. Inc. sed. 1 Guiana.

Tachigalia Aubl. Leguminosae (II. 3). 6 trop. Am.

Tacoanthus Baill. (*Otacanthus* p.p.). Acanthaceae (IV. A). 1 Bolivia.

Tacsonia Juss. (*Passiflora* p.p. *EP.*). Passifloraceae. 25 trop. Am.

Taenidia Drude (*Pimpinella* p.p.). Umbelliferae (III. 5). 1 U.S.

Taeniochlaena Hook. f. Connaraceae. 2 Malay Peninsula, Burma.

Taeniophyllum Blume. Orchidaceae (II. 20). 20 Indomal.

Taeniopleurum Coulter et Rose. Umbelliferae (III. 5). 1 Oregon.

Taenitis Willd. Polypodiaceae. 2 trop. As., Fiji.

Tafalla D. Don. Compositae (4). 5 N. Andes.

Tagasaste, *Cytisus proliferus* L. f.

Tagetes L. Compositae (6). 20 warm Am. Cult. orn. fl.

Tainia Blume. Orchidaceae (II. 9). 12 E. As. Cult. orn. fl.

Tainionema Schlechter (*Secamone* p.p.). Asclep. (II. 1). 1 S. Domingo.

Tainiopsis Schlechter. Orchidaceae (II. 9). 1 Khasias.

Taiwania Hayata. Coniferae (Pinnaceae 24; see C. for gen. char.). 1 Formosa.

Taiwanites Hayata = *Taiwania* Hayata (Con.).

Talauma Juss. Magnoliaceae. 15 trop. E. As. and Am. Like *Magnolia*, but fr. indeh. or breaking off from a persistent base.

Talbotia Sp. Moore. Acanthaceae (IV. B). 1 Nigeria.

Talbotiella E. G. Baker. Leguminosae (II. 2). 1 Nigeria.

Talguenea Miers. Rhamnaceae. 2 Chili.

Taligalea Aubl. (*Amasonia* BH.). Verbenaceae (1). 6 trop. Am.

Talinaria T. S. Brandege. Portulacaceae. 1 Mexico.

Talinella Baill. Portulacaceae. 1 Madag.

Talinopsis A. Gray. Portulacaceae. 1 New Mexico.

Talinum Adans. Portulacaceae. 15 Afr., Am., India.

Talipot palm, *Corypha umbraculifera* L.

Talisia Aubl. Sapindaceae (1). 33 S. Am.

Talisiopsis Radlk. Sapindaceae (II). 1 trop. Afr.

Tallicona, *Carapa guianensis* Aubl.

Tallow tree, *Pentadesma*, *Sapium*.

Tamacoari, *Caraipa*.

Tamarack, *Larix americana* Michx.

Tamaricaceae (*EP.*, *BH.* incl. *Fouquieriaceae*). Dicots. (Archichl.

Parietales; Caryophyllinae *BH.*). 5 gen., 100 sp., temp. and sub-trop. Desert, shore, and steppe pl. Shrubs or herbs with alt. exstip. l., often heath-like. Fls. sol. or in racemose infls., ebracteolate, ♂, reg., hypog. K (4—5); C 4—5; A 4—5, 8—10 or ∞, on a disc; $\bar{G}$ (4—5 or 2), 1-loc. Styles usu. free. Ovules ∞ or few, on basal-parietal plac., ascending, anatropous. Caps. Seeds hairy. Embryo straight; endosp. or not. *Chief genera*: *Reaumuria*, *Tamarix*, *Myricaria*.

Tamarind, *Tamarindus indica* L.; - plum, velvet -, *Dialium*.

Tamarindus Tourn. ex L. Leguminosae (II. 3). 1 trop. Afr. (?), *T. indica* L., the tamarind, largely cult. in the trop. for its ed. fruit (the part eaten is the pulp round the seeds; it is also officinal). The 2 ant. pets. are reduced to bristles, and the 3 fertile sta. united below to a tube. The wood is useful.

Tamariscineae (BH.) = Tamaricaceae.

Tamarisk, *Tamarix gallica* L.

Tamarix L. Tamaricaceae. 65 Eur., As., Medit. *T. gallica* L. (tamarisk) in S.E. England. *T. mannifera* Ehrenb. (Egypt to Afghanistan) produces, owing to the punctures of the insect *Coccus manniparus*, the manna of the Bedouins, a white substance which falls from the twigs.

Tamatavia Hook. f. (*Chapeliera* p.p. EP.). Rubiaceae (1. 8). 1 Madag.

Tambourissa Sonner. Monimiaceae. 25 Madag., Mascarenes.

Tammsia Karst. Rubiaceae (1. 7). 1 Venezuela.

Tamonea Aubl. (*Miconia* Ruiz et Pav.). Melast. (1). 550 trop. Am., W.I.

Tamonea Aubl. Verbenaceae (1). 4 trop. Am., W.I.

Tampico fibre, *Agave*.

Tampona Aubl. Inc. sed. 1 Guiana.

Tamus L. Dioscoreaceae. 2 Eur., Medit. *T. communis* L. (black bryony) in Brit. Climbing plants, hibernating by tubers formed by a lat. outgrowth of the first two internodes of the stem.

Tan (tannin), a bitter substance contained in bark, &c., used for tanning leather, &c., *Acacia* (cutch), *Betula*, *Butea*, *Byrsonima*, *Castanea* (chestnut), *Caesalpinia* (dividivi), *Eucalyptus*, *Gordonia*, *Larix*, *Phyllocladus*, *Pterocarpus*, *Quercus* (oak), *Rhizophora*, *Rhus*, *Rumex* (canaigre), *Schinopsis* (quebracho), *Terminalia*, *Tsuga*, &c. Cf. Dekker, *Die Gerbstoffe*, Berlin, 1913.

Tanacetum Tourn. ex L. (*Chrysanthemum* p.p. EP.). Compositae (7). 30 *. *T. vulgare* L. (tansy) cult. as a popular remedy.

Tanacium Sw. Bignoniaceae (1). 4 W.I. to N. Brazil.

Tanakea Franch. et Sav. Saxifragaceae (1). 1 Japan.

Tanghinia Thou. (*Cerbera* BH.). Apocynaceae (1. 3). 1 Madag.

Tania, *Xanthosoma* spp.

Tannodia Baill. Euphorbiaceae (A. II. 2). 1 Madag.

Tansy, *Tanacetum vulgare* L.

Tanulepis Balf. f. Asclepiadaceae (1). 1 Rodrigues.

Taonabo Aubl. (*Ternstroemia* Mutis). Theaceae. 30 S. Am., As.

Tap root, a main root much longer than the branches.

Tapa cloth, *Broussonetia papyrifera* Vent.

Tapanhuacanga Vell. Rubiaceae (nomen). 1 Brazil.

Tape grass (Am.), *Vallisneria*.

Tapeinanthus Herb. Amaryllidaceae (1). 1 W. Medit.

Tapeinia Juss. Iridaceae (11). 1 Chili, Patagonia.

Tapeinidium (Presl) C. Chr. Polypodiaceae. 4 trop. As., Polynes.

Tapeinochilus Miq. Zingiberaceae (11). 1 Ceram, Austr.

Tapeinoglossum Schlechter. Orchidaceae (11. 16). 1 New Guinea.

Tapeinosperma Hook. f. Myrsinaceae (11). 26 Fiji, New Caled., Austr.

- Tapeinostelma** Schlechter. Asclepiadaceae (II. 3). 1 S. Afr. Xero.
- Tapeinostemon** Benth. Gentianaceae (I). 3 N. Brazil, Guiana.
- Taphrium** (Cl.), a ditch formation.
- Taphrospermum** C. A. Mey. (*Cochlearia* p.p. *BH.*). Crucif. (2). 2 C. As.
- Tapina** Mart. = *Sinningia* Nees p.p. (Gesn.).
- Tapioca**, *Manihot utilisima* Pohl, &c.
- Tapirira** Aubl. Anacardiaceae (2). 6 trop. S. Am.
- Tapirocarpus** Sagot. Burseraceae. 1 Guiana.
- Tapiscia** Oliv. Staphyléaceae. 1 China.
- Tapura** Aubl. Dichapetalaceae. 5 trop. Am., Afr.
- Tar**, *Coniferae*, *Pinus*.
- Taraktogenos** Hassk. (*Hydnocarpus* p.p.). Flacourt. (3). 5 Malaya.
- Tarasa** Phil. Malvaceae (2). 1 Chili.
- Taravalia** Greene (*Ptelea* p.p.). Rutaceae (IV). 3 Lower Calif.
- Taraxacum** L. Compositae (13). 25 temp. *T. officinale* Weber (dandelion), almost cosmop. The thick primary root is perenn. and crowned by a very short sympodial stem; each year a new bud is formed on the leafy axis, to come into active growth in the following year. The roots as they grow to maturity contract and thus drag the stem downwards so that it never rises much above the soil. If the root be cut through, a callus forms over the wound, and from this adv. shoots develop. The fl. mech., &c. all the usu. type of the fam., and show the final autogamy very clearly.
- Taraxia** Nutt., Raimann (*Oenothera* p.p. *BH.*). Onagr. (2). 6 W. U.S.
- Tarchonanthus** L. Compositae (4). 3 S. Afr., Abyss. The wood of *T. camphoratus* L. is used for musical instruments.
- Tardavel** Adans. = *Spermacece* Dill. (*BH.*) = *Borreria* G. F. W. Mey.
- Tare**, *Vicia*.
- Tarennia** Gaertn. Rubiaceae (I. 8). 30 trop. As., Afr.
- Taro**, *Colocasia antiquorum* Schott.
- Tarrietia** Blume. Sterculiaceae. 7 E. As., Austr. Good timber.
- Tarsina** Nor. Inc. sed. Nomen.
- Tartarian lamb**, *Cibotium Barometz* Link.
- Tashiroa** Matsumura. Melastomaceae (I). 2 Loo Choo Is.
- Tasmanian myrtle**, *Nothofagus Cunninghamii* Oerst.
- Tassadia** Decne. in DC. Asclepiadaceae (II. 1). 15 S. Am.
- Tatea** F. Muell. Verbenaceae (I). 1 Austr.
- Taubertia** K. Schum. Menispermaceae. 1 Brazil.
- Tauscheria** Fisch. Cruciferae (2). 2 C. As.
- Tauschia** Schlechtd. Umbelliferae (III. 4). 6 Mexico.
- Tavaresia** Welw. (*Decabelone* p.p. *EP.*). Asclepiad. (II. 3). 2 trop. Afr.
- Taverniera** DC. Leguminosae (III. 7). 7 N. Afr., W. As.
- Taxaceae**. A fam. of *Coniferae* (*q.v.*).
- Taxanthema** Neck. = *Statice* L. (*Plumb.*).
- Taxodium** Rich. (excl. *Glyptostrobus* Endl.). *Coniferae* (*Pinaceae* 28; see C. for gen. char.). 2 N. Am. (swamp-cypresses), *T. distichum* Rich. and *T. mexicanum* Carr. In the former, esp. in swampy ground, curious 'knees' are formed, hollow spherical branches projecting upwards from the roots, and supposed to be aerating organs (*cf.* *Sonneratia*).

Taxonomy, classification of plants by their affinities.

Taxotrophis Blume. Moraceae (1). 4 Indomal.

Taxus (Tourn.) L. Coniferae (Taxaceae, 9; see C. for gen. char.). 8 N. temp., incl. *T. baccata* L., the yew. No short shoots, but the l. of the spreading branches arrange themselves $\pm$ closely in two rows with their upper surfaces nearly in one plane, giving a dorsi-ventral structure to the shoot. Fls. dioec., sol. in the axils of the l. of the preceding year. The σ has a few scale-l. below and about 8 or 10 sta., each of which is shield-shaped with a number of pollen-sacs on the axial side of the shield arranged round its stalk like the sporangia in *Equisetum*. The φ has a rather complex structure. The primary axis bears scale-l. only. In the axil of one of the uppermost of these arises a shoot, continuing the line of the first axis and bearing 3 pairs of scales and a term. ovule. This is orthotr. with one integument, and develops into a seed surrounded by a cup-shaped red and fleshy aril.

The wood of the yew is valuable; in the middle ages it was the chief material used in making bows. The l. are very poisonous, but the aril is harmless. Birds swallow it, and thus dist. the seeds.

Tayotum Blanco. Inc. sed. 1 Phil. Is.

Tchihatchewia Boiss. Cruciferae (4). 1 Armenia.

Tea, *Thea*, *Catha*, *Ledum*, *Neea*, *Priva*, *Stachytarpheta*; **Algerian -**, *Paronychia*; **Australian -tree**, *Melaleuca*; **Labrador -**, *Ledum*; **Mexican -**, *Chenopodium*; **Oswego -**, *Monarda*; **Paraguay -**, *Ilex paraguensis* A. St Hil.; **-plant**, *Lycium*; **Salvador -**, *Gaultheria*; **West Indian -**, *Capraria*.

Teak, *Tectona grandis* L. f.; **bastard -**, *Butea frondosa* Roxb.

Tear thumb (Am.), *Polygonum*.

Teasel, *Dipsacus Fullonum* L.

Teclea Delile (*Toddalia* BH.). Rutaceae (IV). 10 trop. Afr.

Tecoma Juss. (BH. incl. *Tecomaria* Spach, *Campsis* Lour., *Campsidium* Seem., *Pandorea* Endl., and other gen.). Bignoniaceae (2). 90 trop. and warm temp. *T. radicans* Juss. climbs like ivy.

Tecomanthé Baill. Bignoniaceae (2). 1 New Guinea.

Tecomaria Spach (*Tecoma* p.p. BH.). Bignoniaceae (2). 5 S. Am., S. Afr.

Tecomella Seem. (*Tecoma* p.p. BH.). Bignoniaceae (2). 1 Arabia, S.W. As.

Tecophilea Bert. ex Colla. Amaryllidaceae (III). 2 Chili.

Tecticornia Hook. f. Chenopodiaceae (A). 1 Austr.

Tectona L. f. Verbenaceae (4). 3 Indomal. *T. grandis* L. f. is the teak, cult. in Java, India, &c., for its timber, which is very hard and durable; enormous quantities are used for ship-building, &c. There are two areas of teak, in the W. peninsula and Burma; it grows in deciduous forest, but not gregariously. The wood sinks in water unless thoroughly dried; this is effected in India by the process of 'girdling,' which consists in removing a ring of bark and sap-wood from the tree near the base. It soon dies, and is left standing for two years.

Teedia Rudolphi. Scrophulariaceae (II. 4). 2 S. Afr.

- Teesdalia** R. Br. Cruciferae (2). 2 Eur., Medit.; 1 Brit. Fls. in a corymb, which draws out into a raceme as flowering proceeds.
- Teeth**, small marginal lobes.
- Teff grass**, *Eragrostis abyssinica* Schrad.
- Tegmen**, inner coat of testa.
- Teijsmannia** Reichb. f. et Zoll. Palmae (1. 2). 1 Sumatra.
- Teijsmanniodendron** Koorders. Verbenaceae (4). 1, habitat?
- Teinosolen** Hook. f. Rubiaceae (1. 2). 4 Andes.
- Teinostachyum** Munro. Gramineae (13). 5 Indomal.
- Telanthera** R. Br. (*Alternanthera* EP.). Amarant. (3). 50 warm Am., Afr.
- Telectadium** Baill. Asclepiadaceae (1). 1 Tonquin.
- Telegraph plant**, *Desmodium gyrans* DC.
- Telekia** Baumg. (*Bupthalmum* p.p.). Compositae (4). 2 E. and C. Eur.
- Teleology**, doctrine of final causes.
- Telephium** S. F. Gray = *Sedum* L. p.p. (Crass.).
- Telephium** Tourn. ex L. Caryophyllaceae (1. 2) (Aiz. BH.). 3 Medit.
- Telesilla** Klotzsch. Asclepiadaceae (nomen). 1 Guiana.
- Telesonix** Rafin. (*Saxifraga* p.p.). Saxifragaceae (1). 1 N. Am.
- Telfairia** Hook. Cucurbitaceae (2). 2 trop. Afr., Masc. *T. pedata* Hook. is cult. for its seeds, which are ed. and also yield oil.
- Telina** E. Mey. = *Lotononis* Eckl. et Zeyh. p.p. (Legum.).
- Telinaria** Presl = *Cytisus* L. p.p. (Legum.).
- Teline** Medic. = *Cytisus* L. (Legum.).
- Teliostachya** Nees = *Lepidagathis* Willd. (Acanth.).
- Telipogon** H. B. et K. Orchidaceae (11. 19). 80 trop. S. Am.
- Tellima** R. Br. Saxifragaceae (1). 7 N.W. Am.
- Telmatium** (Cl.), a wet meadow formation.
- Telmatophila** Mart. ex Baker. Compositae (1). 1 Piauhy.
- Telminostelma** Fourn. Asclepiadaceae (11. 1). 1 C. Brazil.
- Telopea** R. Br. Proteaceae (11). 3 E. Austr., Tasmania.
- Telophyllum** Van Tiegh. (*Myzodendron* p.p.). Myzodendr. 1 Fuegia.
- Telosma** Coville (*Cynanchum* p.p.). Asclepiadaceae (11. 1). 1 Guam.
- Telotia** Pierre. Menispermaceae. 1 Further India.
- Teloxys** Moq. (*Chenopodium* p.p. EP.). Chenopodiaceae (A). 3 As., Am.
- Temnadenia** Miers. Apocynaceae (inc. sed.). 22 S. Am.
- Temnolepis** Baker. Compositae (5). 1 Madag.
- Temnopteryx** Hook. f. Rubiaceae (1. 7). 1 trop. W. Afr.
- Temple tree**, *Plumeria acutifolia* Poir.
- Templetonia** R. Br. Leguminosae (111. 3). 7 Austr. Like Bossiaea.
- Tenagocharis** Hochst. (*Butomopsis* BH.). Butomaceae. 1 palaeotrop.
- Tenaris** E. Mey. Asclepiadaceae (11. 3). 5 Afr.
- Tendril**, a stem or leaf modified into a thread-like organ which clasps round any slender object with which it comes into contact; cf. Climbing Plants.
- Tenellus** (Lat.), very tender or dainty.
- Tengah bark**, *Ceriops*.
- Tentacles**, cf. Insectivorous Plants.
- Tenuifolius** (Lat.), thin-leaved.

Teonongia Stapf. Moraceae (1). 1 Tonquin.

Teosinte, *Euchlaena mexicana* Schrad.

Tepals, the l. of a homogeneous P.

Tepary, *Phaseolus acutifolius* A. Gray, var. *latifolius* Freeman.

Tephea Delile. Apocynaceae (inc. sed.). 1 trop. Afr.

Tephrosieris Reichb. = *Senecio* Tourn. p.p. (Comp.).

Tephrosia Pers. Leguminosae (III. 6). 140 trop. and sub trop.

Tepualia Griseb. Myrtaceae (II. 1). 1 Chili. Hard wood.

Teramnus Sw. Leguminosae (III. 10). 6 trop.

Terana La Llave. Compositae (inc. sed.). 1 Mexico.

Terauchia Nakai. Liliaceae (III). 1 Corea.

Teratology, the study of monstrosities.

Terebinthus (Tourn.) P. Br. (*Pistacia* p.p. BH.; *Bursera*, &c. p.p.). Anacardiaceae (3). 60 N. Am.

Terete, cylindrical tapering.

Terminalia L. Combretaceae. 120 trop. The fr. of many are winged (see fam.). Those of *T. Chebula* Retz. and others (myrobalans) are used in dyeing and tanning, and also in medicine. The seed of *T. Catappa* L. is ed. (country almond). *T. glabra* Wight et Arn. has aerating roots. The bark is burnt for lime. Good timber: tan from bark.

Terminthodia Ridley. Rutaceae (1). 1 Malay Peninsula.

Ternary, trimerous.

Ternate, with three leaflets arising from same point.

Terniola Tul. = *Lawia* Tul. (Trist.).

Ternstroemia Mutis ex L. f. (*Taonabo* Aubl.). Theaceae. 35 S. Am., As.

Ternstroemiaceae. A fam. in Bentham and Hooker's 5th cohort (Guttiferales) divided into several fams. by Engler. The bulk of the genera are placed in *Theaceae*, the rest in *Caryocaraceae*, *Marsgraviaceae*, *Slachyuraceae*, *Dilleniaceae*, *Guttiferae*, &c.

Ternstroemiopsis Urb. (*Eurya* p.p.). Theaceae. 1 Hawaiian Is.

Terrellia Lunell (*Elymus* p.p.). Gramineae (12). 8 N. Am.

Tersonia Moq. Phytolaccaceae. 2 W. Austr.

Tertrea DC. (*Machaonia* p.p. EP.). Rubiaceae (II. 2). 1 Martinique.

Tessarandra Miers (*Linociera* BH.). Oleaceae. 1 Brazil.

Tessaria Ruiz et Pav. Compositae (4). 4 Argentina to Calif.

Tessellate, chequer-worked.

Tessenia Buhani (*Erigeron* p.p.). Compositae (3). 20 N. Am.

Tesmannia Harms. Leguminosae (II. 2). 1 Spanish Guinea.

Testa, the seed coat, cf. Seed.

Testaceus (Lat.), brick-red.

Testudinaria Salish. Dioscoreaceae. 2 Cape Col. incl. *T. Elephantipes* Salish. (Hottentot bread). General habit of a Dioscorea, but an enormous tuber, the swollen first internode of the stem, projecting out of the soil, with a thick outer coating of cork. From it yearly, during the wet season, springs by adv. budding the year's shoot, a long thin climbing stem with large l. and small fls. This dies down in the dry season, and the corky covering protects the mass of the plant from drought.

Tetaris (Lindl. in) Chesn. Boraginaceae (inc. sed.). 2 Mesopotamia.

- Tetilla** DC. Saxifragaceae (II). 1 Chili.
- Tetra-** (Gr. pref.), four; **-cyclic**, in four whorls; **-delphous**, in four bundles; **-dynamous**, with four long and two short, sta. of *Cruciferae*; **-merous**, with parts in fours; **-morphic**, in four forms; **-ndrous**, with four sta.; **-pteros**, four-winged.
- Tetracanthus** A. Rich. Compositae (5). 1 Cuba.
- Tetracarpaea** Hook. f. Saxifragaceae (v). 1 Tasmania.
- Tetracarpidium** Pax. Euphorbiaceae (A. II. 2). 1 Cameroons.
- Tetracentron** Oliv. Trochodendraceae. 1 China.
- Tetracera** L. Dilleniaceae. 5 trop., esp. Am.
- Tetrachaete** Chiovenda. Gramineae (3). 1 Erythraea.
- Tetracne** Nees. Gramineae (II). 1 Cape Colony.
- Tetrachondra** Petrie. Inc. sed. 1 New Zealand.
- Tetraclea** A. Gray. Labiatae (I). 1 S. U.S., Mexico.
- Tetraclinis** Mast. Coniferae (Pinaceae 31; see C. for gen. char.).
1 N. W. Afr., *T. articulata* Mast., the source of Arar wood and sandarach resin or pounce. See *Ann. Bot.* xxvii. 577.
- Tetraclis** Hiern. Ebenaceae. 1 Madag.
- Tetracme** Bunge. Cruciferae (4). 5 E. Medit.
- Tetracmidion** Korshinsky. Cruciferae (4). 1 W. As.
- Tetracoccus** Engelm. ex Parry. Euphorbiaceae (A. I. 1). 1 Lower Calif.
- Tetracronia** Pierre. Rutaceae (v). 1 Cochinchina.
- Tetractomia** Hook. f. Rutaceae (1). 2 Malaya.
- Tetractys** Spreng. Ranunculaceae (genus dubium). 1 S. Afr.
- Tetracustelma** Baill. (*Lachnostoma* p.p.). Asclepiad. (II. 4). 2 Mexico.
- Tetrad**, a group of 4, usu. pollen grains, *Ericaceae*.
- Tetradenia** Benth. Labiatae (vi). 3 Madag.
- Tetradenia** Nees (*Litsea* Lam. BH.). Lauraceae (I). 30 trop. As., Austr.
- Tetradia** Bennett. Sterculiaceae. 1 Java.
- Tetradiclis** Stev. ex Bieb. Zygophyllaceae (Rut. BH.). 1 W. As., Egypt.
- Tetradymia** DC. Compositae (8). 5 N.W. Am.
- Tetraena** Maxim. Zygophyllaceae. 1 Mongolia.
- Tetragamestus** Reichb. f. (*Ponera* BH.). Orchidaceae (II. 6). 2 trop. Am.
- Tetragastris** Gaertn. (*Hedwigia* BH.). Burseraceae. 3 W.I., C. Am.
- Tetraglochidion** K. Schum. Euphorbiaceae (A. I. 1). 1 New Guinea.
- Tetraglochin** (Kunze in) Poepp. (*Margyricarpus* BH.). Ros. (III. 5). 1 Chili.
- Tetragonia** L. Aizoaceae (II). 25 Cape Col., Austr., N.Z., &c. Sometimes 2 fls. stand one above the other in the same axil. From the fr. thorny projections grow out which may bear fls. (an argument for the axial nature of the inf. ovary). *T. expansa* Murr. is often used as a vegetable (New Zealand spinach).
- Tetragonolobus** Scop. (*Lotus* p.p. BH.). Leguminosae (III. 5). 7 Eur., Medit.
- Tetragonotheca** L. Compositae (5). 3 U.S., Mexico.
- Tetragyne** Miq. Euphorbiaceae (inc. sed.). 1 Sumatra.
- Tetralix** Griseb. Flacourtiaceae (inc. sed.). 1 Cuba.
- Tetralopha** Hook. f. Rubiaceae (II. 9). 1 Borneo.

- Tetrameles** R. Br. Datisceae. 1 Indomal.
Tetrameris Naud. = *Comolia* DC. (Melast.).
Tetramerista Miq. Theaceae (Ochnaceae *BH.*). 2 Malaya.
Tetramerium Gaertn. f. = *Faramea* Aubl. p.p. (Rubi.).
Tetramerium Nees. Acanthaceae (iv. B). 7 C. Am.
Tetramicra Lindl. Orchidaceae (ii. 6). 7 W.I., trop. S. Am.
Tetramolopium Nees. Compositae (3). 7 Hawaiian Is.
Tetranema Benth. Scrophulariaceae (ii. 4). 1 Mexico. Cult. orn. fl.
Tetraneuris Greene (*Actinella* p.p.). Compositae (6). 30 N. Am.
Tetranthera Jacq. = *Litsea* Lam. (Laur.).
Tetranthus Sw. Compositae (5). 4 S. Domingo, Cuba.
Tetrapanax C. Koch (*Fatsia* *BH.*). Araliaceae (1). 1 Formosa, *T. papyrifera* C. Koch, the rice-paper tree. Pith split into thin sheets and pressed.
Tetrapathaea Reichb. (*Passiflora* p.p. *BH.*). Passiflor. 1 N. Zealand.
Tetraperone Urb. (*Pinillonia* p.p.). Compositae (5). 1 Cuba.
Tetrapetalum Miq. Anonaceae (1). 1 Borneo.
Tetraphyllaster Gilg. Melastomaceae (1). 1 W. trop. Afr.
Tetraphyllum Griff. Gesneriaceae (1). 1 N.E. Bengal, Siam.
Tetraphysa Schlechter. Asclepiadaceae (ii. 1). 1 Colombia.
Tetraplacus Radlk. (*Otacanthus* *EP.*). Scrophular. (ii. 6). 1 Brazil.
Tetraplandra Baill. (*Algernonia* *BH.*). Euphorb. (A. ii. 7). 2 Brazil.
Tetraplasandra A. Gray. Araliaceae (1). 8 E. Malaya, Hawaiian Is.
Tetrapleura Benth. Leguminosae (i. 4). 3 trop. W. Afr.
Tetrapogon Desf. Gramineae (ii). 5 Medit.
Tetrapteris Cav. Malpighiaceae (1). 70 trop. Am., W.I. Lianes.
Tetrapterygium Fisch. et Mey. (*Sameraria* p.p. *EP.*). Cruc. (2). 2 W. As.
Tetrardisia Mez. Myrsinaceae (ii). 1 Java.
Tetraria Beauv. (*Elynanthus* Nees). Cyperaceae (ii). 30 ✱.
Tetrariopsis C. B. Clarke. Cyperaceae (ii). 1 Austr.
Tetrarrhena R. Br. Gramineae (7). 4 Austr.
Tetrasiphon Urb. Celastraceae. 1 W.I.
Tetraspidium Baker. Scrophulariaceae (iii. 2). 1 Madag.
Tetrastemma Diels ex H. Winkler. Anonaceae (1). 1 Cameroons.
Tetrastigma Planch. (*Vitis* p.p.). Vitaceae. 40 warm As., Austr.
Tetrastigma K. Schum. (*Schumanniphytum* Harms). Rubiaceae (i. 8). 1 Cameroons.
Tetrastylidium Engl. Olacaceae. 2 S. Brazil.
Tetrastylis Barb. Rodr. (*Passiflora* p.p.). Passifl. 1 Rio de Jan.
Tetrasynandra Perkins (*Kibara* p.p.). Monimiaceae. 3 Austr.
Tetrataxis Hook. f. Lythraceae. 1 Mauritius.
Tetrathalamus Lauterb. Guttiferae (v). 1 New Guinea.
Tetratheca Sm. Tremandraceae. 20 S. and W. Austr.
Tetrathylacium Poepp. et Endl. Flacourtiaceae (7). 1 trop. S. Am.
Tetrathyrium Benth. (*Loropetalum* *BH.*). Hamamelidaceae. 1 Hongkong.
Tetraulacium Turcz. Scrophulariaceae (ii. 6). 1 Brazil.
Tetrazygia Rich. Melastomaceae (1). 15 W.I.
Tetreilema Turcz. Verbenaceae (?). 2 Chili, Bolivia.

- Tetroncium** Willd. Scheuchzeriaceae (Naiad. *BH.*). 1 Str. of Magellan.
- Tetrorchidium** Poepp. et Endl. Euphorbiaceae (A. II. 6). 4 trop. Am.
- Tetrorum** Rose (*Sedum* p.p.). Crassulaceae. 1 S.E. U.S.
- Tetrouratea** Van Tiegh (*Gomphia* p.p.). Ochnaceae. 1 Brazil.
- Teucridium** Hook. f. Verbenaceae (4). 1 New Zealand.
- Teucrium** (Tourn.) L. Labiatae (1). 100 cosmop.; 4 in Brit. (wood sage or germander), incl. *T. scorodonia* L. Fl. with small upper lip, protandr. with movement of style and sta.
- Texiera** Jaub. et Spach. Cruciferae (2). 1 Syria.
- Teysmannia** (*Teijsmannia*) Reichb. f. et Zoll. Palmae (I. 2). 1 Sum.
- Thacombauia** Seem. Euphorbiaceae (inc. sed.) (Humir. *BH.*). 1 Fiji.
- Thalamus**, the receptacle, *q.v.*
- Thalassia** Banks. Hydrocharidaceae. 1 Ind. and Pac., 1 Atl. Ocean.
- Thalassium** (Cl.), a sea formation.
- Thalia** L. Marantaceae. 7 Am., Afr. The std. β (see fam.) present.
- Thalictrum** Tourn. ex L. Ranunculaceae (3). 10 N. temp. (*T. flavum* L., meadow-rue, and 2 others in Brit.). Fls. small; P sepaloid or slightly coloured and soon falling. Some are visited by pollen-seeking insects, but *T. minus* L. and others are wind-fert. and protog., retaining traces of entomophilous ancestry in a slight cohesiveness of the pollen and the fact that the anthers dehisce successively.
- Thalloid**, of thallus form; **thallus**, *Podostemaceae*, *Tristichaceae*.
- Thaminophyllum** Harv. Compositae (7). 2 Cape Colony.
- Thamnea** Soland. ex R. Br. Bruniaceae. 4 S. Afr.
- Thamnochortus** Berg. Restionaceae. 15 S. Afr.
- Thamnoseris** Phil. f. Compositae (inc. sed.). 1 Chili.
- Thamnosma** Torr. et Frem. Rutaceae (1). 4 S.W. U.S., Socotra, S. Afr.
- Thapsia** L. Umbelliferae (III. 7). 6 Medit.
- Thapsus** Rafin. = *Verbascum* Tourn. (Scroph.).
- Thaspium** Nutt. Umbelliferae (III. 5). 3 N. Am.
- Thatch-palm**, *Sabal*, *Thrinax*, &c.
- Thaumatocaryum** Baill. (*Antiphytum* *EP.*). Boragin. (IV. 4). 1 Brazil.
- Thaumatococcus** Benth. Marantaceae. 1 W. trop. Afr.
- Thaumatophyllum** Schott. Araceae (?). 1 Amazonas.
- Thayeria** Copeland. Polypodiaceae. 1 Phil. Is.
- Thea** L. (*Camellia* p.p. *BH.*). Theaceae. 16 India to Japan. The chief is *T. sinensis* L., the tea plant, largely cult. in China, India, Ceylon, Japan, &c. *T. assamica* J. W. Mast. (perhaps only a var.) is also cult. It has larger l. When growing wild it forms a small tree, but in cult. is kept pruned into a small bush. The young shoots (bud and 2 or more l.) are nipped off, withered, rolled (to express a little juice), then fermented (except for green tea), dried, and sorted into grades (pekoe, souchong, congou, &c.). Cf. Watt, *Commercial Prod. of India*. [Synonymy: *T. Bohea* L. and *T. viridis* L. = *T. sinensis*; *T. Camellia* Hoffmgg. = *Camellia japonica*.]
- Theaceae** (*EP.*; *Ternstroemiaceae* p.p. *BH.*). Dicots. (Archichl. Parietales). 16 gen., 175 sp., trop. and subtrop. Trees or shrubs with simple alt. leathery l. Fls. usu. sol., ♂, often partly spiral. K 5,

6 or 7, imbr., persistent; C 5, rarely 4, 9 or ∞ , imbr.; A ∞ , rarely 5, 10 or 15, free or in bundles or united into a tube; G 2-3-5-10-loc., with 2, 4 or ∞ anat. ov. in each. Caps. or drupe. Embryo usu. curved; endosp. little or none. The only important economic plant is Thea; Camellia is a favourite in cult. *Chief genera*: Thea, Camellia, Gordonia, Ternstroemia, Eurya.

Theca, a sporangium, an anther locus.

Theacoris A. Juss. Euphorbiaceae (A. 1. 1). 6 trop. Afr., Madag.

Theocarpus Boiss. Umbelliferae (III. 1). 1 Persia.

Thecophyllum E. André (*Guzmania* p.p.). Bromel. (1). 3 C. and S. Am.

Thecostele Reichb. f. Orchidaceae (II. β . 11). 3 Burma, Malaya.

Theetsee, *Melanorrhoea usitata* Wall.

Theileamia (*Phaulopsis* p.p. EP.). Acanthaceae (IV. A). 1 Madag.

Thelasis Blume. Orchidaceae (II. 16). 12 Indomal., China.

Thelepogon Roth. ex Roem. et Sch. Gramineae (2). 1 Abyss. to India.

Thelesperma Less. Compositae (5). 8 Am.

Thelygonaceae = Cynocrambaceae.

Thelygonum L. (*Cynocrambe* Tourn. q.v.). Cynocrambaceae. 2 Medit., W. and C. As, incl. *T. Cynocrambe* L. (*C. prostrata*, Gaertn.).

Thelymitra Forst. Orchidaceae (II. 2). 20 Austr., Malaya, N.Z. Fl. almost reg. Some fert. themselves in bud, the fl. afterwards expanding.

Thelypodopsis Rydberg (*Thelypodium* p.p.). Cruc. (1). 2 Rockies.

Thelypodium Endl. Cruciferae (1). 18 U.S., Mexico.

Themeda Forsk. (*Anthistiria*, q.v.). Gramineae (2). 15 palaeotrop.

Themistoclesia Klotzsch (*Anthopterus* EP.). Ericaceae (III. 2). 3 Colombia.

Thenardia H. B. et K. Apocynaceae (II. 2). 1 Mexico.

Theobroma L. Sterculiaceae. 12 trop. Am, incl. *T. Cacao* L., *T. pentagona* Bernoulli and others producing cacao, cocoa, or chocolate. The young l. are red and pendulous. The fls. are borne on the old wood, and give large tough berry-fruits, containing exalbum. seeds, which after roasting &c., yield cocoa or chocolate. The pressed seeds yield cocoa-butter.

Theodora Medic. (*Schotia* Jacq.). Leguminosae (II. 3). 6 trop. and S. Afr.

Theodorea Barb. Rodr. (*Gomesa* EP.). Orchidaceae (II. 19). 1 Brazil.

Theophrasta L. Theophrastaceae. 4 trop. Am., W.I. The upper part of the stem bears thorny scales. Serial buds occur in the leaf-axils and ultimately cause the phenomenon of cauliflory, for fls. arise in the axils of scale-l. on these compressed shoots.

✓ **Theophrastaceae** (EP.; *Myrsinaceae* p.p. BH.). Dicots. (Sympet. Primulales). 4 gen., 45 sp., trop. Am., Hawaiian Is. Trees and shrubs with alt. exstip. l., often crowded at end of stem. Fl. $\varnothing$ or σ $\varnothing$ reg. K 5; C (5), A 5 with 5 stds., G 1-loc. with ∞ ovules on free central or rarely basal plac. Drupe. Endosp. *Genera*: Theophrasta, Deherainia, Clavija, Jacquinia.

Therophonum Blume. Araceae (VII). 5 Indomal.

Thermium (Cl.), a hot-spring formation.

Thermopsis R. Br. Leguminosae (III. 2). 15 Himal. to Carolina.

Thermotropism, curvature dependent upon temperature.

Therophon (*Therofon*) Rydberg (*Boykinia* p.p.). Saxifr. (I). 4 N. Am.

Theropogon Maxim. Liliaceae (VII). 1 Himalaya.

Therorhodon Small (*Rhododendron* p.p.). Eric. (I. 2). 2 N.W. Am., N.E. As.

Thesidium Sonder. Santalaceae. 6 S. Afr.

Thesium L. Santalaceae. 235 temp and trop. *T. humifusum* DC. in Brit. (bastard toad-flax). Herbaceous root-parasites with green l. (see Scrophulariaceae). Fls. ♂, in racemes. Bract adnate to peduncle, and with the 2 bracteoles forms a sort of involucre. P (3—5), tubular. G inf.

Thespesia Soland. Malvaceae (4). 5 palaeotrop.

Thespesocarpus Pierre (*Diospyros* p.p. *EP.*). Ebenaceae. 1 trop. Afr.

Thespidium F. Muell. Compositae (4). 1 trop. Austr.

Thespis DC. Compositae (3). 1 Nepal to Burma.

Thevenotia DC. Compositae (II). 2 W. As.

Thevetia L. Apocynaceae (I. 3). 8 trop. Am. ✓

Thevetia Vell. Rutaceae (inc. sed.). 1 Brazil.

Thevetiana O. Ktze. = *Thevetia* Vell. (Rut.).

Thibaudia Ruiz et Pav. (incl. *Ceratostema* Juss.). Ericaceae (III 2). 50 trop. Am., often cult. orn. fl.

Thieleodoxa Cham. (*Alibertia* p.p. *BH.*). Rubi. (I. 8). 1 C. Braz. Fr. ed.

Thiersia Baill. Rubiaceae (II. 5). 1 Guiana.

Thigmotropism, curvature induced by rough surface.

Thilea Eichl. (*Combretum* p.p. *BH.*). Combretaceae. 5 Brazil.

Thimble berry (Am.), *Rubus occidentalis* L.

Thinium (Cl.), a dune formation.

Thinobia Phil. (*Nardophyllum* p.p. *EP.*). Compositae (2). 1 Chili.

Thinouia Planch. et Triana. Sapindaceae (I). 10 warm S. Am.

Thiseltonia Hemsl. Compositae (4). 1 W. Austr.

Thismia Griff. Burmanniaceae. 14 Indomal., trop. Afr., S. Am. Saprophytes. See Groom in *Ann. of Bot.*, June 1895.

Thistle, *Carduus*, *Cnicus*, *Onopordon*, &c.; **blessed** -, *Cnicus*; **carline** -, *Carlina*; **cotton** -, *Onopordon*; **globe** -, *Echinops*; **milk** -, *Silybum*; **Russian** -, *Salsola*; **Scottish** -, *Onopordon Acanthium* L.; **sow** -, *Sonchus*; **star** -, *Centaurea*; **yellow** - (W.I.), *Argemone*.

Thladiantha Bunge. Cucurbitaceae (I). 8 E. As. to Java. Climbing herbs with root-tubers.

Thlaspi (Tourn.) L. Cruciferae (2). 60 N. temp.; 3 Brit. (penny-cress).

Thollonia Baill. (*Icecina* p.p. *EP.*). Icacinaceae. 1 French Congo.

Thomandersia Baill. (*Scytanthus* *BH.*). Acanthaceae (IV. B). 3 W. Afr.

Thomasia J. Gay. Sterculiaceae. 25 Austr.

Thomassetia Hemsl. (*Brexia* p.p. *EP.*). Saxifragaceae (v). 1 Seychelles.

Thompsonella Britton et Rose (*Echeveria* p.p.). Crass. 2 Mexico.

Thomsonia Wall. Araceae (IV). 1 Himalaya, Assam.

Thonnera De Wild. Anonaceae (1). 1 Congo.

Thonningia Vahl. Balanophoraceae. 1 trop. Afr.

Thoracosperma Klotzsch (*Simochilus* K.). Ericaceae (IV. 2). 5 S. Afr.

Thoracostachyum Kurz (*Mapania* p.p. *EP.*). Cyperaceae (II). 2 Malaya.

Thorea Rouy (*Avena* p.p.). Gramineae (9). 1 France.

Thoreldora Pierre. Rutaceae (V). 1 Cochinchina.

Thorelia Hance. Inc. sed. 1 Cochinchina.

Thorn, a stiff pointed outgrowth, which may be of various origin, e.g. epidermal, *Prosopis*, *Rosa*, epidermal with lower tissue (emergence), *Ribes*, branches, *Carissa*, *Colletia*, *Crataegus*, *Gleditschia*, *Gymnosporia*, *Haematoxylon*, *Hydrolea*, *Plectronia*, flower-stalk, *Mesembryanthemum*, leaf, *Azima*, *Cactaceae*, *Chuquiraga*, *Citrus*, *Limonia*, leaflet, *Cycadaceae*, midrib, *Astragalus*, *Fouquieria*, ovary, *Tetragonia*, petiole, *Astragalus*, root, *Acanthorrhiza*, *Iriarteia*, stipules, *Acacia*, *Machaerium*, *Paliurus*, *Polygala*, *Seguieria*, *Zizyphus*; **thorn**, *Crataegus*; - **apple**, *Datura*; **black** -, *Prunus spinosa* L.; **Kaffir** -, *Lycium*: **kangaroo** -, *Acacia*.

Thorncroftia N. E. Br. Labiatae (VII). 1 Transvaal.

Thoroughwort (Am.), *Eupatorium*.

Thoro-wax, **throw-wax**, *Bupleurum rotundifolium* L.

Thorvaldsenia Liebm. Orchidaceae (inc. sed.). 1 Mexico.

Thottea Roxb. Aristolochiaceae. 6 Malaya.

Thouinia Poit. Sapindaceae (I). 15 W.I., Mexico. Lianes.

Thouinidium Radlk. (*Thouinia* p.p. *BH.*). Sapindaceae (I). 4 W.I., C. Am.

Thozetia F. Muell. Asclepiadaceae (II. 3). 1 Austr.

Thraulococcus Radlk. (*Sapindus* p.p. *BH.*). Sapindaceae (I). 2 India.

Threlkeldia R. Br. Chenopodiaceae (A). 3 Austr.

Thrift, *Armeria vulgaris* Willd.

Thrinax L. f. ex Sw. Palmae (I. 2). 15 W.I. (thatch-palm). The l. are used for roofing, and the plants also yield useful fibre.

Thrinicia Roth. = *Leontodon* L. p.p. (Comp.).

Thrincoma O. F. Cook. Palmae (I. 2). 1 Porto Rico.

Thringis O. F. Cook. Palmae (I. 2). 2 Porto Rico.

Thrixspermum Lour. (*Sarcochilus* R. Br.). Orchidaceae (II. 20). 15 Malaya.

Thrum-eyed (*Primula*), short-styled.

Thryallis L. = *Galphimia* Cav. (Malpigh.).

Thryallis Mart. Malpighiaceae (II). 8 Brazil, Mexico.

Thryocephalon Forst. = *Kyllinga* Rottb. (Cyper.).

Thryothamnus Phil. Verbenaceae (I). 1 Chili.

Thryptomene Endl. Myrtaceae (II. 2). 22 Austr., esp. W.

Thuarea Pers. Gramineae (5). 1 Indomal., on the coast.

✓ **Thuja** (*Thuya*) L. Coniferae (Pinaceae 38; see C. for gen. char.). 6 China, Japan, N. Am., *T. occidentalis* L. is the American, *T. orientalis* L. the Chinese, *Arbor-vitae*. The l. are small and closely appressed to the stems, which show dorsi-ventral symmetry. Cones of 3 or 4 pairs of scales, the uppermost sterile and often united to form the *columella*, the lowest also often sterile.

[*Synonymy*: *T. dolabrata* Thunb. = *Thujopsis dolabrata*; *T. chilensis* Don = *Libocedrus chilensis*; *T. Doniana* Hook. = *L. Doniana*;

T. tetragona Hook. = *L. tetragona*; *T. gigantea* Carr. = *Libocedrus decurrens*.]

Thujopsis Sieb. et Zucc. Coniferae (Pinaceae 36; see C. for gen. char.). 1 Japan, *T. dolabrata* Sieb. et Zucc.

Thunbergia Retz. (*BH.* incl. *Meyenia* Nees). Acanthaceae (III). 100 palaeotrop. Many cult. orn. fl. Many twiners. The bracteoles enclose the K and tube of the fl. and are often united post. K truncate, or many-toothed.

Thunbergianthus Engl. Scrophulariaceae (III. 2). 1 St Thomas.

Thunia Reichb. f. (*Phaius* p.p. *BH.*). Orchid. (II. 9). 4 E. Indomal.

Thuranthos C. H. Wright. Liliaceae (v). 1 S. Afr.

Thuraria Molina. Inc. sed. 1 Chili.

Thurberia Benth. Gramineae (8). 2 Texas, Arkansas.

Thurnia Hook. f. Thurniaceae. 2 Guiana. Herbs with narrow l., and heads of fls. on 3-angled stalks with several long bracts. Fls. ♂, reg., 3-merous; homochlam. A 6, G (3), 3-loc. with 1—∞ ov. in each. Caps. 3-seeded. Endosp.

Thurniaceae (*EP.*; *Juncaceae* p.p. *BH.*). Monocots. (Farinosae). Only genus *Thurnia*, *q.v.*

Thurovia Rose. Compositae (6). 1 Texas.

Thurya Boiss. et Bal. Caryophyllaceae (I. 1). 1 Asia Minor.

Thuspeinanta Durand (*Tapeinanthus* Boiss.). Labi. (vi). 2 W. As.

Thuya L. = *Thuja* L. (Conif.).

Thyella Rafin. (*Jacquemontia* p.p.). Convolv. (I). 12 trop. Am.

Thylacanthus Tul. Leguminosae (II 8). 1 Amazon valley.

Thylachium Lour. Capparidaceae (II). 12 E. trop. Afr., Madag., Masc.

Thylacospermum Fenzl. Caryophyllaceae (I. 1). 1 C. As.

Thymbra L. Labiatae (vi). 1 S.E. Eur., W. As.

Thyme, *Thymus*; **thymol**, *Carum copticum* Benth. et Hook. f.

Thymelaea Tourn. ex Scop. Thymelaeaceae. 20 Medit., temp. As.

Thymelaeaceae (*EP.*, *BH.*). Dicots. (Archichl. Myrtiflorae; Daphnales *BH.*). 38 gen., 550 sp., temp. and trop., esp. in Afr. Most are shrubs with entire alt. stip. l. and racemose infls. Fl. usu. ♂, reg., 4—5-merous. Recept. much hollowed, usu. forming a deep tube of leafy consistence ('calyx-tube'); outgrowths of the axis are sometimes found at the base of the tube round the ovary. K petaloid, like the tube, usu. inbr.; C conspic. or small or 0; A as many or twice or half as many as sepals, inserted on edge of tube; G 1- or rarely 2-loc., each loc. with 1 pend. anatr. ov. with ventral raphe; style simple. Achene, berry, or drupe, often enclosed in the persistent recept.: a few have caps. Embryo straight; endosp. little or none.

Chief genera: Gnidia, Thymelaea, Daphne, Pimelea. The family is a very natural one, but with no very close affinities.

Thymelaeales. Formerly the 21st order of Archichlamydeae.

Thymelaeinae (Warming). The 17th order of Choripetalae.

Thymophylla Lag. (*Dysodia* p.p. *EP.*). Compositae (6). 3 Mex., Texas.

Thymopsis Benth. Compositae (6). 1 Cuba.

Thymus Tourn. ex L. Labiatae (vi). 33 N. |*. *T. Serpyllum* L.

- (thyme) in Brit. Fls. gynodioec. with marked protandry. *T. vulgaris* L. (garden thyme) used in flavouring.
- Thyrocarpus** Hance. Boraginaceae (IV. 1). 3 China.
- Thyroid**, shield-like.
- Thyroma** Miers (*Aspidosperma* Mart. et Zucc. p.p.). Apocynaceae (I. 3). 9 Brazil, W.I.
- Thyrsacanthus** Nees (*Odontonema* EP.). Acanth (IV. B). 25 trop. Am.
- Thyrsanthus** Benth. = *Forsteronia* G. F. W. Mey. (Apocyn.).
- Thyrsodium** Salzm. ex Benth. Anacard. (3). 4 trop. S. Am., W. Afr.
- Thyrsopteris** Kunze. Polypodiaceae. 1 Juan Fernandez.
- Thyrsostachys** Gamble (*Rottboellia* p.p.). Gram. (2). 2 Khasias.
- Thyrsus**, an ovate panicle.
- Thysanocarex** Börner = *Carex* Dill. p.p. (Cyper.).
- Thysanocarpus** Hook. Cruciferae (4). 6 Calif.
- Thysanolaena** Nees. Gramineae (4). 1 trop. As. (tiger grass).
- Thysanospermum** Champ. ex Benth. Rubiaceae (I. 5). 1 Hongkong.
- Thysanotus** R. Br. Liliaceae (III). 22 Austr., S.E. As.
- Thysanurus** O. Hoffm. Compositae (1). 1 Angola.
- Thysanus** Lour. Inc. sed. 1 China.
- Thysselinum** Adans. = *Peucedanum* Tourn. (BH.) = *Selinum* L.
- Tiarella** L. Saxifragaceae (1). 4 China, N. Am.
- Tibouchina** Aubl. Melastomaceae (1). 200 trop. Am.
- Tickseed** (Am.), *Coreopsis*; - **trefoil** (Am.), *Desmodium*.
- Ticorea** Aubl. Rutaceae (1). 3 Guiana.
- Tiedemannia** DC. (*Peucedanum* p.p. BH.). Umbell. (III. 6). 4 N. Am.
- Tieghemella** Pierre. Sapotaceae (inc. sed.). 2 W. trop. Afr.
- Tieghemopanax** Viguier (*Polyscias* EP.). Aral. (1). 26 Austr., N. Cal.
- Tigellum**, plumule.
- Tiger flower**, *Tigridia pavonia* Ker-Gawl.
- Tigridia** Juss. Iridaceae (II). 7 Mexico, C. Am. *T. Pavonia* Ker-Gawl. (tiger flower), cult. orn. fl. The fls. only last 8—12 hours.
- Tiles**, cf. Bamboos.
- Tilia** (Tourn.) L. Tiliaceae. 12 N. temp. *T. platyphyllos* Scop. and other limes in Brit. Note leaf-mosaic (see fam.). The l. are usu. covered with honey-dew (see Acer). Fls. in little cymes, arising from axils of l. of current year; the axillary growing point elongates transversely, giving rise to two buds, one of which forms the infl., the other the bud for the next year's growth. The further development of the infl. is complex, but throughout there occurs 'adnation' of bracts to the axes arising in their axils, particularly noticeable in the first l. of the infl.-axis, which forms a wing, covering the fls. Honey is secreted at the base of the sepals. Fls. protandrous, dependent upon insects for fert.; largely visited by bees &c., and a valuable source of honey. Fr. a nut. Endosp. very oily. The wood of lime and of *T. americana* L. (bass-wood) is useful. The inner fibre of the bark (bass) is very useful for tying.
- Tiliaceae** (EP.; BH. incl. *Elaeocarpaceae*). Dicots. (Archichl. Malvales). 35 gen., 380 sp., trop. and temp., chiefly S.E. As. and Brazil. Trees or shrubs, rarely herbs, with alt. stip. l., often showing well-marked

2-ranked arrangement. In the trees the shoots spread out horiz. and the insertions of the l. are upon the upper half, so that the divergence is not $\frac{1}{2}$. The end bud of the branch does not develop in the next year. Frequently the l. is asymmetrical, with the smaller side towards the branch. In the herbs the l. are in two ranks diverging at a right angle; torsion of the l. occurs later on and produces a dorsiventrality. The infl. is always, at least after the first branching, cymose, and often very complex, e.g. in *Tilia* and *Triumfetta* (q.v.).

Fl. usu. $\frac{5}{8}$, reg., 5—4-merous. K 5 or (5), valvate: C 5, rarely ∞ , often glandular at base; A usu. ∞ , free or united in groups, inserted at base of petals or on androphore, with ditheous anthers; $\overline{G}$ 2— ∞ -loc., with 1— ∞ ov. in each; ov. usu. ascending, $\pm$ anatr.; style simple, with capitate or lobed stigma. The T. yield useful timber, jute (*Corchorus*) and other fibre. The most constant distinction from Malvaceae is in the ditheous anthers, from Theaceae in the valvate calyx, &c. *Chief genera*: *Corchorus*, *Sparmannia*, *Tilia*, *Grewia*, *Triumfetta*.

Tiliacora Colebr. Menispermaceae. 8 Indomal.

Tillaea Mich. ex L. Crassulaceae. 20 cosmop. (1 Brit.).

Tillaeastrum Britton (*Tillaea* p.p.). Crassulaceae. 2 N. Am.

Tillandsia L. Bromeliaceae (1). 250 warm Am. Some resemble the rest of the fam.—epiphytes with pitchers—while others, and especially *T. usneoides* L. (long moss, Spanish moss, old man's beard, vegetable horsehair), show a different habit, hanging in long grey festoons from the branches of trees, looking rather like a lichen (esp. *Usnea*). At the base, each of the pendent stems is wound round its support, and as the apex grows on downwards the older parts die away, leaving the axile strand of sclerenchyma (the 'horsehair'). The whole pl. is thickly covered with the usual scaly hairs for absorbing the water trickling over it. It has no storage reservoir for water at all. The fls. appear but rarely. The pl. is largely distributed from tree to tree by the wind. Birds also use it for nesting and thus carry it about. [See Schimper, *Die epiph. Vegetat. Amerikas*, p. 67, Plate II.] It is used like horsehair. Some cult. orn. infl.

Tiller, a sucker from base of stem.

Tilmia O. F. Cook (*Martinezia* p.p.). Palmae (IV. 2). 2 trop. S. Am.

Timber, any woody growth of sufficient thickness to be workable into useful objects. The wood of a stem (Dicot.) grows in thickness, adding one layer each year (in temp. zones), recognizable in cross section as a *ring of growth*, or *annual ring*. In the trop., the rings are not usu. so clear, and more than one may form in a year. In longitudinal section (esp. radial), the medullary rays of the wood show as the *silver grain*. As a rule the sap runs up in the outer part of the wood (*sap-wood* or *alburnum*), while the inner part becomes more dry and hard (*heart-wood* or *duramen*). The pores in the wood seen in cross section are the large vessels in which the sap runs, and the greater the proportion of them (e.g. in climbing plants) the more *coarse-grained* is the wood.

Physical characters, such as hardness, weight per unit bulk, density or compactness of grain, breaking strain, fuel value, and the like, are also of great importance.

By far the most important source of timber is the *Coniferae* (q.v.).

which give the deals, firs, pines, larches, hemlocks, spruces, cypresses, &c. Among the ∞ other important genera are *Acacia* (blackwood), *Acer* (maple), *Adenanthera*, *Azalia*, *Ailanthus*, *Albizia* (siris), *Andira*, *Arctostaphylos* (manzanita), *Artocarpus* (jak), *Baphia* (camwood), *Barringtonia*, *Bassia*, *Berrya* (Trincomali wood), *Betula* (birch), *Bombax*, *Brosimum*, *Brya* (cocus, Jamaica ebony), *Bucklandia*, *Buxus* (box), *Cabralea*, *Caesalpinia* (Brazil-wood, sappan), *Calophyllum*, *Caraipa*, *Carya* (hickory), *Caryocar*, *Castanea* (chestnut), *Casuarina* (ironwood, beefwood), *Catalpa*, *Cecropia*, *Cedrela* (cedar, toon), *Celtis*, *Cercis*, *Chickrassia* (Indian red wood), *Chloroxylon* (satinwood), *Copaifera*, *Cornus*, *Corylus*, *Crataegus* (hawthorn), *Cupania*, *Curtisia* (assegai wood), *Dalbergia* (rosewood, &c.), *Dimorphandra* (mora), *Diospyros* (ebony, &c.), *Dipterocarpaceae*, *Duguetia* (lancewood), *Ebenaceae*, *Eperua* (wallaba), *Erica* (bruyere, briar), *Erythrina* (kaffir-boom), *Eucalyptus* (gun, karri, jarrah, &c.), *Euonymus* (spindlewood), *Fagara* (W.I. satin), *Fagus* (beech), *Feronia*, *Ficus*, *Flinandersia*, *Fraxinus* (ash), *Garcinia*, *Gleditschia*, *Gmelina*, *Grevillea* (silky oak), *Guaiacum* (lignum vitae), *Haematoxylon* (logwood), *Heritiera*, *Herminiera*, *Hymenaea*, *Ilex* (holly), *Jacaranda*, *Juglans* (walnut), *Khaya* (Afr. mahogany), *Lagerstroemia*, *Laurelia*, *Laurus*, *Leguminosae*, *Liquidambar* (satin walnut), *Liriodendron* (white wood), *Lophira* (Afr. oak), *Maba*, *Machaerium*, *Maclura* (bowwood), *Melaleuca*, *Melanoxylon*, *Melia*, *Mesua*, *Metrosideros* (rata), *Michelia*, *Mimusops*, *Murraya*, *Myoporum*, *Nectandra* (greenheart), *Nyssa*, *Ochroma* (corkwood), *Ocotea* (stinkwood), *Olea* (olive, N.Z. maire), *Oldfieldia* (Afr. oak), *Ostrya* (leverwood), *Palmae* (several, such as *Borassus*, *Cocos*, &c. give useful small timber), *Pappea*, *Pericopsis*, *Peumus*, *Pittosporum*, *Planera*, *Platanus* (plane), *Populus* (poplar), *Pterocarpus* (padouk, red sanders), *Quassia*, *Quercus* (oak), *Robinia* (locus), *Royena* (zwartbast), *Salix* (willow), *Santalum* (sandalwood), *Schleichera* (Ceylon oak), *Shorea* (sal), *Sophora*, *Stenocarpus* (beefwood), *Swartzia* (beefwood), *Swietenia* (mahogany), *Tectona* (teak), *Terminalia*, *Tilia* (lime, basswood), *Tristania* (brushbox), *Ulmus* (elm), *Vatica*, *Xylia*, *Zelkova*, *Zizyphus* (cogwood), and many more. It should be noted that the common name of a timber is no proof of its botanical origin. New timbers brought upon the market must be given familiar names. and *Swietenia* as a source of mahogany, for example, has been almost superseded by *Khaya*. For details see Stone's *Timbers of Commerce*, and Gamble's *Indian timbers*, and manuals of forestry.

Timeroyea Montr. (*Pisonia* p.p. *LP.*). Nyctaginaceae. 1 New Caled.

Timonius Rumph. Rubiaceae (II. 2). 30 Indomal.

Timothy grass, *Phleum pratense* L.

Tina Roem. et Schult. (*Ratonia BII.*). Sapindaceae (I). 8 Madag.

Tinantia Scheidw. Commelinaceae. 3 trop. Am., W.I.

Tinctorius (Lat.), used for dyeing.

Tinguarra Parl. Umbelliferae (III. 2). 3 Medit.

Tiniaria Reichb. (*Polygonum* p.p.). Polygonaceae (III. 2). 3 N. Am.

Tinnea Kotschy et Peyr. Labiatae (I). 10 trop. Afr.

Tinnia Nor. Inc. sed. Nomen.

Tinomiscium Miers. Menispermaceae. 5 trop. As.

- Tinopsis** Radlk. (*Gelonium* p.p.). Sapindaceae (1). 1 Madag.
- Tinospora** Miers. Menispermaceae. 18 palaeotrop.
- Tiphium** (Cl.), a pool formation.
- Tipuana** Benth. Leguminosae (III. 1). 3 S. Am.
- Tipularia** Nutt. Orchidaceae (II. 5). 2 N. Am., Himal. to Japan.
- Tiquiliopsis** A. A. Heller (*Coldenia* p.p.). Borag. (II). 1 Rockies.
- Tirania** Pierre. Capparidaceae (inc. sed.). 1 Cochinchina.
- Tirium** (Cl.), a bad-land formation.
- Tisonia** Baill. Flacourtiaceae (4). 5 Madag.
- Tissa** Adans. (*Spergularia* B.H.). Caryophyll. (I. 2). 20 cosmop.
- Titanotrichum** Solereder (*Rehmannia* p.p.). Scroph. (III. 1). 1 Formosa.
- ✓ **Tithonia** Desf. ex Juss. Compositae (5). 10 C. Am., Cuba. *T. diversifolia* A. Gray (Mexican sunflower) now a common weed in trop. As.
- Tithymalopsis** Klotzsch et Garke (*Euphorbia* p.p.). Euphorbiaceae (A. II. 8). 15 N. Am.
- Tithymalus** Tourn. ex Hall. (*Euphorbia* p.p.). Euph. (A. II. 8). 15 N. Am.
- Tittmannia** Brong. Bruniaceae. 1 S. Afr.
- Tittmannia** Reichb. = *Vandellia* L. (B.H.) = *Lindernia* All.
- Tium** Medic. (*Astragalus* p.p.). Leguminosae (III. 6). 10 N. Am.
- Tmesipteris** Bernh. Psilotaceae. 1 Austr., N.Z., Polynes., *T. tannensis* Bernh. It grows as an epiphyte (? parasite) on the trunks of tree ferns. The rhizome bears large lanceolate green l.
- Toad flax**, *Linaria*; **bastard** --, *Thesium*.
- Tobacco**, *Nicotiana*.
- Tococa** Aubl. Melastomaceae (1). 40 trop. S. Am.
- Tocoyena** Aubl. Rubiaceae (1. 8). 8 S. Am., Cuba.
- Todaroa** Parl. Umbelliferae (III. 5). 2 Teneriffe.
- Toddalia** Juss. Rutaceae (IV). 1 trop. As., Afr., Madag.
- Toddaliopsis** Engl. Rutaceae (IV). 1 Zanzibar.
- Toddy**, *Borassus*, *Caryota*, *Cocos*, &c.; - **palm**, *Caryota urens* L.
- Todea** Willd. Osmundaceae. 1 S. Afr., Austr., *T. africana* Willd. (*T. barbara* Moore); apogamous (see Filicales).
- Toechema** Radlk. Sapindaceae (1). 6 Austr., New Guinea.
- Tofieldia** Huds. Liliaceae (1). 15 N. temp., Andes. *T. palustris* Huds. (Scottish asphodel) in Brit. 3-lobed invol. (*calyculus*) beneath the K.
- Tolbonia** O. Ktze. Compositae (3). 1 Annam.
- Tolmiea** Torr. et Gray. Saxifragaceae (1). 1 Pac. N. Am., *T. Menziesii* Torr. et Gray. Adv. buds on upper part of petiole. Axial cup split down ant. side. Pets. thread-like; only 3 post. sta. occur.
- Tolpis** Adans. Compositae (13). 15 Azores, Canaries, Medit.
- Tolu**, balsam of, *Myroxylon toluiferum* H. B. et K.
- Toluifera** L. (*Myroxylon* Forst., q.v.). Legum. (III. 1). 6 trop. S. Am.
- Tomato**, *Solanum Lycopersicum* L.; **gooseberry** -, **strawberry** -, *Physalis*; **tree** -, *Cyphomandra*.
- Tomentose**, with cottony felt of hairs.
- Tomex** Thunb. = *Litsea* Lam. (Laur.).
- Tonalanthus** T. S. Brandege. Compositae (5). 1 Mexico.

- Tondin** G. W. Schilling. Inc. sed. 1 Guiana.
- Tonduzia** Pittier (*Rauwolfia* p.p.). Apocynaceae (I. 3). 2 C. Am.
- Tonella** Nutt. ex A. Gray. Scrophulariaceae (II. 4). 2 W. U.S.
- Tonestus** A. Nelson (*Aplopappus* p.p.). Compositae (3). 3 N. Am.
- Tonina** Aubl. Eriocaulonaceae. 1 trop. S. Am., W.I.
- Tonka** or **Tonquin bean**, *Dipteryx odorata* Willd.
- Tontelea** Aubl. = *Salacia* L. (Hippocrat.).
- Tooart, towart** (Austr.), *Eucalyptus gomphocephala* DC.
- Toon**, *Cedrela Toona* Roxb.
- Toona** M. Roem. (*Cedrela* p.p. *BH.*). Meliaceae (I). 8 As., Austr.
- Toothache grass** (Am.), *Ctenium*; - **tree**, *Zanthoxylum*; - **weed**, *Spi-lanthes*; - **wort** (Am.), *Dentaria*.
- Toothwort**, *Lathraea squamaria* L.
- Topee tampo**, *Calathea Allouia* Lindl.
- Topiary**, formal ornamental gardening.
- Topobea** Aubl. Melastomaceae (I). 20 warm Am. Ed. fr.
- Topographical agents** in distr., mountains, rivers, seas, soil, &c.
- Tordylium** Tourn. ex L. Umbelliferae (III. 6). 16 Eur. (1 Brit.), N. Afr., As.
- Torenia** L. Scrophulariaceae (II. 6). 22 trop.
- Torgesia** Bornmüller. Gramineae (8). 1 Palestine.
- Toricellia** DC. Cornaceae. 2 Himalaya, China.
- Torilis** Adans. (*Caucalis* *BH.*). Umbellif. (III. 2). 23 Medit, N. As., Afr.
- Tormentil**, *Potentilla Tormentilla* Neck.
- Tormentilla** (Tourn.) L. = *Potentilla* L. (Ros.).
- Tornabenea** Parl. ex Webb. Umbelliferae (III. 7). 3 Cape Verde Is.
- Tornelia** Gutierrez = *Monstera* Adans. (Arac.).
- Torrallbasia** Krug. et Urb. (*Euonymus* p.p.). Celastraceae. 1 W.I.
- Torresia** Allem. (*Amburana* Schwacke et Taub.). Legum. (III. 1). 1 Braz.
- Torreya** Arn. Coniferae (Taxaceae 8; see C. for gen. char.). 4 N. Am., China, Japan. Like *Taxus*. The timber is useful.
- Torricellia** DC. Cornaceae. 2 Himalaya, China.
- Torrubia** Vell. (*Pisonia* Plum.). Nyctaginaceae. 9 Am., W.I.
- Torulinium** Desv. (*Mariscus* *BH.*, *Cyperus* p.p. *EP.*). Cyperaceae (I). 6 W.I., Colombia to Chili.
- Torulose**, cylindrical with slight contractions.
- Torus**, floral receptacle, *q.v.*
- Total parasites**, those that take all food from the host.
- Touch me not**, *Impatiens*.
- Touchardia** Gaudich. Urticaceae (3). 1 Hawaiian Is.
- Touchiroa** Aubl. (*Crudia* Schreb.). Legum. (II. 3). 2 Borneo, Burma.
- Toulicia** Aubl. Sapindaceae (I). 10 trop. S. Am.
- Touloucouna**, *Caraipa*.
- Tounatea** Aubl. (*Swartzia* Schreb.). Leguminosae (II. 9). 60 trop. Am., Afr.
- Tournefortia** L. Boraginaceae (III). 120 trop. and sub trop. Trees and shrubs.
- Tournefortiopsis** Rusby. Rubiaceae (II. 2). 1 Bolivia.
- Tournesol**, *Chrozophora tinctoria* A. Juss.

- Tourneuxia** Coss. Compositae (13). 1 Algeria.
- Tournonia** Moq. Basellaceae. 1 Colombia.
- Touroulia** Aubl. Quinaceae. 3 Guiana, Brazil.
- Tourrettia** Fougereux. Bignoniaceae (5). 1 Peru to Mexico.
- Tous les mois**, *Canna edulis* Ker-Gawl.
- Touteria** Eaton et Wright (*Mentzelia* p.p.). Loasaceae. 17 N. Am.
- Tovaria** Neck. = *Smilacina* Desf. (Lili.).
- Tovaria** Ruiz et Pav. Tovariaceae. 2 W.I., S. Am. Herbs with term. racemes. Fl. ♀, reg. K, C, A, 8, G (6—8) with plac. reaching to centre, and ∞ ovules. Berry. Endosp.
- Tovariaceae** (EP., *Capparidaceae* p.p. BH.). Dicots. (Archichl. Rhoadales). Only genus *Tovaria*, q.v.
- Tovomita** Aubl. Guttiferae (v). 30 trop. Am.
- Tovomitopsis** Planch. et Triana (*Chrysochlamys* BH.). Guttiferae (v). 10 trop. Am.
- Tow**, *Linum usitatissimum* L.
- Towel gourd**, *Luffa*.
- Townsendia** Hook. Compositae (3). 18 Rocky Mts.
- Townsonia** Cheeseman. Orchidaceae (II. 2). 1 New Zealand.
- Toxanthera** Hook. f. Cucurbitaceae (2). 2 S. and trop. Afr.
- Toxanthes** Turcz. Compositae (4). 2 S. and W. Austr.
- Toxicodendron** (Tourn.) L. (*Rhus* p.p.). Anacard. (3). 35 N. Am.
- Toxicodendrum** Thunb. Euphorbiaceae (A 1. 1). 1 Cape Colony.
- Toxicophlaea** Harv. = *Acokanthera* G. Don (Apocyn.).
- Toxicoscordion** Rydberg (*Zygadenus* p.p.). Liliaceae (1). 10 N. Am.
- Toxocarpus** Wight et Arn. (*Secamone* EP.). Asclepiadaceae (II. 1). 22 palaeotrop.
- Tozzettia** Savi = *Alopecurus* L. (Gram.).
- Tozzia** L. Scrophulariaceae (III. 3). 1 Alps, 1 Carpathians. Semi-parasites, with loose-pollen fls. (see fam.).
- Trabeculae**, *Isoetes*.
- Tracaulon** Rafn. (*Polygonum* p.p.). Polygon. (II. 2). 20 Am., As., Austr.
- Tracheliopsis** Buser (*Campanula* p.p.). Campan. (I. 1). 3 Medit.
- Trachelium** Tourn. ex L. Campanul. (1). 7 Medit. Cult. orn. fl.
- Trachelospermum** Lem. Apocynaceae (II. 1). 8 India to Japan.
- Trachyandra** Kunth = *Anthericum* L. p.p. (Lili.).
- Trachycarpus** H. Wendl. Palmae (I. 2). 5 E. As.
- Trachydium** Lindl. Umbelliferae (III. 4). 12 E. Afr. to China.
- Trachylobium** Hayne. Leguminosae (II. 3). 3 trop As., E. Afr. These yield copal, which is dug up from the soil near the roots or in a half-fossilised condition from places where trees once existed.
- Trachymene** DC. = *Platysace* Bunge (Umbell.).
- Trachymene** Rudge. Umbelliferae (I. 1). 14 Austr. to Borneo.
- Trachynotia** Michx. = *Spartina* Schreb. (Gram.).
- Trachyphrynium** Benth. Marantaceae. 6 trop. Afr.
- Trachypogon** Nees. Gramineae (2). 2 Am., S. Afr., Madag.
- Trachypteris** Andrée. Polypodiaceae. 1 trop. Am.
- Trachys** Pers. Gramineae (3). 1 coast of India.
- Trachyspermum** Link (*Carum* p.p. BH.). Umbellif. (III. 6). 12 Afr., S. As.

- Trachystemon** D. Don. Boraginaceae (iv. 3). 2 Medit.
- Trachystigma** C. B. Clarke (*Didymocarpus* p.p. *EP.*). Gesneriaceae (i). 1 trop. Afr.
- Tracyanthus** Small (*Zygadenus* p.p.). Liliaceae (8). 1 N. Am.
- Tradescantella** Small (*Tradescantia* p.p.). Commelin. 2 N. Am.
- Tradescantia** Rupp. ex L. Commelinaceae. 35 trop. and N. Am.
T. virginiana L. (spider-wort), &c. Cult. orn. fl. 6 perfect sta. covered with hairs. Protandr. Infl. a cincinnus.
- Tragacanth**, *Astragalus*, esp. *gummifer* Labill.
- Tragacantha** Tourn. ex L. = *Astragalus* Tourn. (Legum.).
- Tragantes** Wallr. (*Eupatorium* p.p.). Compositae (2). 5 N. Am.
- Traganum** Delile. Chenopodiaceae (B). 2 Medit.
- Tragia** Plum. ex L. Euphorbiaceae (A. II. 2). 55 trop., subtrop.
- Tragium** Spreng. = *Pimpinella* Riv. p.p. (Umbell.).
- Tragoceros** H. B. et K. Compositae (5). 4 Mexico. The C of ♀ fl. becomes rigid after fert., and forms a double hook upon the fr.
- Tragopogon** (Tourn.) L. Compositae (13). 35 N. temp. |* (*T. pratensis* L., goat's beard, in Brit.). The fl.-heads of the Brit. sp. close at midday, whence its name of 'John-go-to-bed-at-noon.' *T. porrifolius* L. (salsify) sometimes grown as a vegetable.
- Tragopyrum** Bieb. = *Atraphaxis* L. (Polypod.).
- Tragoselinum** Tourn. ex Hall. = *Pimpinella* Riv. p.p. (Umb.).
- Tragus** Hall. Gramineae (3). 2 trop. and subtrop.
- Trailing arbutus**, *Epigaea repens* L.; - **azalea**, *Loiseleuria*.
- Trailliaedoxa** W. W. Smith et Forrest. Rubi. (inc. sed.). 1 W. China.
- Tralliana** Lour. Inc. sed. 1 Cochinchina.
- Translator**, *Asclepiadaceae*.
- Transpiration**, evaporation of water from plant.
- Trap flowers**, fls. which entrap visitors, allowing them to escape by another road, or at another time, past the essential organs, *Aristolochia*, *Arum*, *Asarum*, *Ceropegia*, *Coryanthes*, *Cypripedium*, *Magnolia*.
- Trapa** L. Onagraceae (1), sometimes in a special fam. Hydrocaryaceae. 3 |* (horn-nut), incl. *T. natans* L. Water pl. with floating l. and submerged adv. roots which contain chlorophyll and assimilate. Fl. ♂, 4-merous, perig., with a disc. above the sta. G 2-loc., with one anatropous pend. ov. in each; raphe ventral. Seed large, exalbum., in a horned nut; used as food in China, &c.
- Trapella** Oliv. Pedaliaceae. 2 China, Japan.
- Trapeziform**, of unsymmetrical 4-sided shape.
- Trasus** S. F. Gray = *Carex* Dill. p.p. (Cyper.).
- Trattinickia** Willd. Burseraceae. 2 trop. S. Am.
- Traunia** K. Schum. Asclepiadaceae (II. 3). 1 Kilimandjaro.
- Trautvetteria** Fisch. et Mey. Ranunculaceae (3). 1 Japan, N. Am.
- Traveller's joy**, *Clematis*; - **tree**, *Ravenala*.
- Treacle mustard**, *Erysimum*.
- Tread softly** (Am.), *Jatropha*.
- Trechonaetes** Miers. Solanaceae (2). 1 Chili.
- Treculia** Decne. ex Tréc. Moraceae (II). 6 W. trop. Afr. The seeds of *T. africana* Decne. (okwa) are ground into meal.
- Tree**, a woody plant usu. with only one stem at base, and > 30 feet high;

- fern, *Alsophila*, *Brainea*, *Cyathea*, *Dicksonia*, *Hemitelia*, &c.; - of heaven, *Ailanthus*; - tomato, *Cyphomandra*.
- Trefoil.** *Trifolium*; bird's foot-, *Lotus*; shrubby-, *Ptelea*.
- Treichelia** Vatke. Campanulaceae (1). 1 S. Afr.
- Treleasea** Rose (*Setcreasea* EP.). Commelinaceae. 5 N. Am.
- Trema** Lour. Ulmaceae. 30 trop.
- Tremacanthus** Sp. Moore. Acanthaceae (1v. A). 1 Matto Grosso.
- Tremandra** R. Br. Tremandraceae. 2 W. Austr.
- Tremandraceae** (EP., BH.). Dicots. (Archichl. Geraniales; Polygalinae BH.). 2 gen., 26 sp. Austr. Herbs with whorled, alt. or opp., exstip. l. Fls. dichlam., reg. K 4—5, rarely (4—5), valvate; C 4—5, valvate; A 8, 10, or rarely 6; G (2), medianly placed; style and stigma simple; ovules 1 or 2 in each loc., anatropous. Caps., loculic. or also septic. Album. seed, with or without aril. *Genera*: Tetratheca, Tremandra.
- Tremandreae** (BH.) = Tremandraceae.
- Tremanthera** F. Muell. Theaceae. 1 New Guinea.
- Trematolobelia** Zahlbr. ex Rock (*Lobelia* p.p.). Campanulaceae (111). 1 Hawaiian Is.
- Trematosperma** Urb. Icacinaceae. 1 Somaliland.
- Trembleya** DC. Melastomaceae (1). 14 S. Brazil.
- Trentepohlia** Roth. = *Heliophila* Burm. f. (Crucif.).
- Trepocarpus** Nutt. ex DC. Umbelliferae (111. 5). 1 S. U.S.
- Tresanthera** Karst. (*Rustia* BH.). Rubiaceae (1. 1). 2 Venezuela, W.I.
- Tretocarya** Maxim. Boraginaceae (1v. 2). 2 China, Himalaya.
- Traubella** Pierre (*Palaquium* p.p.). Sapotaceae (1). 1 Sumatra.
- Treubia** Pierre (*Lophopyxis* EP.). Icacinaceae. 1 Ceram.
- Treutlera** Hook. f. Asclepiadaceae (11. 3). 1 Sikkim.
- Trevesia** Vis. Araliaceae (1). 4 Indomal.
- Trevirana** Willd. = *Achimenes* P. Br. p.p. (Gesn.).
- Trevoa** Miers. Rhamnaceae. 3 Andes.
- Trevoria** F. C. Lehmann. Orchidaceae (11. 13). 2 Ecuador, Colombia.
- Trewia** L. Euphorbiaceae (A. 11. 2). 2 Indomal.
- Tri-** (Gr. and Lat. pref), three; **-adelphous**, **-androus**, **-carpellary**, **-chotomous** (branching into 3), **-cyclic** (with 3 whorls), **-farious** (facing 3 ways), **-fid**, **-foliate**, (with 3 leaflets), **-gonous** (3-angled), **-lobous**, **-locular**, **-merous** (parts in 3s), **-morphism** (with 3 forms, *Lythrum*, &c.), **-oecism** (♂, ♂, ♀, each on its own pl., *Silene* sp.), **-pterous** (3-winged), **-quetrous** (3-edged, with hollow faces), **-stichous** (in 3 ranks), **-ternate** (thrice ternate), &c., &c.
- Triactina** Hook. f. et Thoms. Crassulaceae. 1 Sikkim.
- Triaenophora** Solereder (*Rehmannia* p.p.). Scroph. (111. 1). 1 China.
- Triainolepis** Hook. f. Rubiaceae (11. 5). 2 E. Afr., Madag.
- Trianaea** Planch. et Linden (*Dyssochroa* p.p. BH.). Solanaceae (3). 1 Colombia.
- Trianea** Karst. = *Limnobia* Rich. (BH.) = *Hydromystria* G. F. W. Mey.
- Trianoptiles** Fenzl (*Ecklonea* BH.). Cyperaceae (11). 1 S. Afr.
- Trianosperma** Mart. = *Cayaponia* Silva Manso p.p. (Cucurb.).
- Trianthema** L. Aizoaceae (11). 13 trop.
- Trianthera** Wettst. (*Calceolaria* p.p.). Scrophul. (11. 2). 1 Peru.
- Trias** Lindl. Orchidaceae (11. 16). 3 Indomal.

- Triaspis** Burchell. Malpighiaceae (1). 12 trop. and S. Afr.
Tribeles Phil. Saxifragaceae (v). 1 temp. S. Am.
Triblemma R. Br. ex DC. = *Bertolonia* Raddi (Melast.).
Tribonanthes Endl. Amaryllidaceae (111). (*Haemodor. BH.*) 5 S.W. Austr.
Tribrachya Korth. (*Morinda* p.p. *EP.*). Rubiaceae (11. 9). 1 Sumatra.
Tribroma O. F. Cook (*Theobroma* p.p.). Sterculiaceae. 1 Colombia.
Tribulus Tourn. ex L. Zygophyllaceae. 12 Afr., As., Am., Medit. (caltrops). The mericarps have sharp rigid spines which may stick into the foot of an animal. Each contains 3—5 seeds, and is divided by cross walls which develop after fert.
Tricalistra Ridley. Amaryllidaceae (11). 1 Malay Peninsula.
Tricalysia A Rich. Rubiaceae (1. 8). 50 trop. Afr., As.
Tricardia Torr. Hydrophyllaceae. 1 W. U.S.
Tricera Schreb. = *Buxus* L. p.p. (*Bux.*).
Triceros Lour. Anacardiaceae (inc. sed.). 1 Cochinchina.
Trich- (Gr. pref.), hair; **-ome**, a hair structure.
Trichacanthus Zoll. et Mor. Acanthaceae (IV. B). 1 Java.
Trichadenia Thw. Flacourtiaceae (3). 1 Ceylon.
Trichaetolepis Rydberg (*Adenophyllum* p.p.). Comp. (6). 1 Mex., S.W. U.S.
Trichantha Hook. Gesneriaceae (1). 2 Colombia.
Trichanthemis Regel et Schmalh. Compositae (7). 1 Turkestan.
Trichanthera H. B. et K. Acanthaceae (IV. A). 1 trop. Am.
Trichelostylis Lestib. = *Fimbristylis* Vahl p.p. (Cyper.).
Trichera Schrad. = *Scabiosa* Tourn. (*BH.*) = *Knautia* L. p.p.
Trichilia P. Br. Meliaceae. 175 trop.
Trichinium R. Br. (*Ptilotus* p.p. *EP.*). Amarantaceae (2). 55 Austr.
Trichlora Baker. Liliaceae (IV). 1 Peru.
Trichloris Fourn. ex Benth. Gramineae (11). 2 Mexico.
Trichobasis Turcz. Myrtaceae (inc. sed.). 1 Austr.
Trichocalyx Balf. f. Acanthaceae (IV. B). 2 Socotra.
Trichocarya Miq. (*Angelesia BH.*). Rosaceae (VI. b). 2 Sumatra.
Trichocaulon N. E. Br. Asclepiadaceae (11. 3). 12 S. Afr
Trichocentrum Poepp. et Endl. Orchidaceae (11. 19). 16 trop. Am. Cult.
Trichocephalus Brongn. = *Phyllica* L. (Rhamn.).
Trichocereus Riccob. (*Cereus* p.p.). Cactaceae (111. 1). 2 temp. S. Am.
Trichoceros H. B. et K. Orchidaceae (11. 19). 8 Peru, Colombia.
Trichochiton Komarov. Cruciferae (4). 1 Turkestan.
Trichochloa Beauv. = *Muehlenbergia* Schreb. p.p. (Gram.).
Trichocladus Pers. Hamamelidaceae. 3 S. and trop. Afr.
Trichocline Cass. Compositae (12). 30 S. Am., S.W. Austr.
Trichocoronis A. Gray. Compositae (2). 3 Texas, Mexico.
Trichodesma R. Br. Boraginaceae (IV 1). 20 palaetrop.
Trichodielsida Cerv. (*Blepharidachne EP.*). Gramineae (10). 2 Mexico.
Trichodium Michx. = *Agrostis* L. (Gramin.).
Trichodopsis Baill. Palmae (IV. 1). 2 Madag.
Trichoglottis Blume Orchidaceae (11. 20). 15 Malay Archipelago.
Trichogonia Gardn. Compositae (2). 12 trop. S. Am.
Trichogyne Less. = *Ifloga* Cass. (Comp.).

- Tricholaena** Schrad. Gramineae (5). 10 Afr., Madag., Medit. *T. rosea* Nees is cult. for dry bouquets.
- Tricholepis** DC. Compositae (11). 12 Indomal.
- Tricholobus** Blume. Connaraceae. 3 Malaya, Austr.
- Trichomanes** L. Hymenophyllaceae. 240 cosmop.; *T. radicans* Sw., the bristle fern, in Ireland.
- Trichonema** Ker-Gawl. = *Romulea Maratti* (Irid.).
- Trichoon** Roth. (*Phragmites* p.p.). Gramineae (10). 1 trop. As., Austr.
- Trichopilia** Lindl. Orchidaceae (11. 19). 20 trop. Am. Cult. orn. fl.
- Trichopteryx** Nees. Gramineae (9). 12 trop. and S. Afr., Madag., Braz.
- Trichoptilium** A. Gray. Compositae (6). 1 W. U.S.
- Trichopus** Gaertn. Dioscoreaceae. 1 Indomal.
- Trichosacme** Zucc. Asclepiadaceae (11. 4). 1 Mexico.
- Trichosandra** Decne. Asclepiadaceae (11. 3). 1 Mauritius.
- Trichosanthes** L. Cucurbitaceae (3). 42 E. Indomal.
- Trichoscypha** Hook. f. Anacardiaceae (3). 25 trop. Afr.
- Trichosma** Lindl. Orchidaceae (11. a. 11). 1 Himal. Axis lengthened at top carrying lat. sepals forward, forming a chin. Cult.
- Trichospermum** Blume (*Didlidocarpus* EP.). Tiliaceae. 2 Malaya, Fiji.
- Trichospira** H. B. et K. Compositae (5). 1 trop. Am.
- Trichosporum** D. Don (*Aeschynanthus* Bll.). Gesner. (1). 70 Indomal, China.
- Trichostachys** Hook. f. Rubiaceae (11. 5). 6 W. trop. Afr.
- Trichostelma** Baill. Asclepiadaceae (11. 4). 1 Mexico.
- Trichostema** Gronov. ex L. Labiatae (1). 8 N. Am.
- Trichostephanus** Gilg. Flacourtiaceae (6). 1 Cameroons.
- Trichostigma** A. Rich. Phytolaccaceae. 3 trop. Am.
- Trichotheca** Ndz. = *Byrsonima* Rich. p.p. (Malpigh.).
- Trichotosia** Blume (*Eria* p.p.). Orchidaceae (11. 15). 60 Indomal.
- Trichouratea** Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 25 Brazil, W.I.
- Trichovaselia** Van Tiegh. Ochnaceae. 1 Venezuela.
- Trichymenia** Rydberg (*Hymenopappus* p.p.). Compositae (6). 1 S.W. U.S.
- Triclisia** Benth. Menispermaceae. 12 trop. Afr., Madag.
- Tricomaria** Gill. ex Hook. f. Malpighiaceae (1). 1 Argentina.
- Tricomariopsis** Dubard. Malpighiaceae (1). 1 Madag.
- Tricoryne** R. Br. Liliaceae (111). 6 Austr.
- Tricostularia** Nees. Cyperaceae (11). 7 Indomal.
- Tricuspidaia** Ruiz et Pav. (*Crinodendron* EP.). Elaeocarp. 2 Peru, Chili.
- Tricuspis** Beauv. = *Triodia* R. Br. p.p. (Gram.).
- Tricycla** Cav. (*Bougainvillaea* p.p. EP.). Nyctaginaceae. 1 Argentina.
- Tricyrtis** Wall. Liliaceae (1). 5 Himal., E. Asia. Cult. orn. fl.
- Tridactyle** Schlechter (*Angraecum* p.p.). Orchid. (11. 20). 3 Nyassaland.
- Tridalia** Nor. Inc. sed. Nomen.
- Tridax** L. Compositae (5). 18 trop. Am.

- Tridens** Roem. et Schult. (*Triodia* p.p.). Gramineae (10). 7 N. Am.
- Tridesmis** Lour. (*Croton* p.p. *EP.*). Euphorbiaceae (A. II. 1). 1 China.
- Tridesmostemon** Engl. Sapotaceae (1). 1 Cameroons.
- Tridianisia** Baill. Icacinaceae. 1 Madag.
- Tridimeris** Baill. Anonaceae (1). 1 Mexico.
- Tridophyllum** Neck. (*Potentilla* p.p.). Rosaceae (III. 2). 9 Am.
- Trientalis** Rupp. ex L. Primulaceae. 2 N. temp. *T. europaea* L. (chickweed winter-green) in Brit. Rhiz. with erect stem bearing about 4-7 l. in a tuft and a few 7-merous fls.
- Trifax** Nor. Inc. sed. Nomen.
- Trifolium** (Tourn.) L. Leguminosae (III. 4). 290 temp. and subtemp.; 20 in Brit. (clover, trefoil, shamrock). The fl. has the simplest mechanism in the fam., the sta. and style emerging as the keel is depressed by an insect resting on the wings, and returning when it is released. The fls. of white clover are an important source of honey; those of red clover are too long-tubed for hive-bees and are visited by humble-bees. *T. subterraneum* L. has two kinds of infl., one normal, the other becoming subterranean. Only 3 or 4 of its fls. develop, the rest forming grappels (each sepal forming a reflexed hook); the stalk of the infl. bends downwards and gradually forces the fls. under the earth, where the fr. ripen (*cf.* *Arachis*). *T. badium* Schreb. has a wing upon the fr. formed by the persistent C., *T. fragiferum* L. a bladdery 'wing' formed by the K. The clovers are important pasture and hay plants; among the chief are *T. repens* L. (white or Dutch clover), *T. pratense* L. (red clover), *T. hybridum* L. (alsike), &c.
- Triglochin** Riv. ex L. Scheuchzeriaceae. 12 cosmop.; 2 in Brit. (arrow-grass), in fresh water- or salt-marshes (*T. palustre* L. and *T. maritimum* L.). Tufted herbs with leafless flg. scapes ending in spikes or racemes. L. linear, fleshy in the maritime sp. P 3+3, A 3+3, G (3+3), or sometimes 3 with 3 abortive cpls. between the fertile. By a process of secondary growth the inner whorl of P comes to stand higher on the axis than the outer sta. Fl. protog., wind-pollinated. The pollen collects in the hollowed bases of the P-leaves. The ripe cpls. surround a central beak (*cf.* *Geranium*), and are prolonged outwards at the base into long sharp spines, by whose means, breaking away from the beak, they may be animal-distr.
- Trigonachras** Radlk. (*Sapindus* p.p. *BH.*). Sapindaceae (1). 2 Malaya.
- Trigonella** L. Leguminosae (III. 4). 70 Medit., Eur. (1 Brit.), As., S. Afr., Austr. *T. Foenum-graecum* L. (fenugreek) is sometimes cult. as curry stuff and for veterinary medicine. The fls. of *T. Aschersoniana* Urban bury themselves like those of *Arachis*.
- Trigonia** Aubl. Trigoniaceae. 26 trop. Am.
- Trigoniaceae** (*EP.*; *Vochysiaceae* p.p. *BH.*). Dicots. (Archichl. Geraniales). 2 gen., 28 sp., trop. Am., Malaya. Woody pl., often climbing, with alt. or opp. l., stip. or not, and ♂ obliquely $\perp$ fls. K (5), C 5, A 5, 6, or 10-12, $\pm$ united below, $\overline{G}$ (3) each with ∞ -2 ov. Caps. Endosp. Chief genus: *Trigonia*.
- Trigoniastrum** Miq. Trigoniaceae. 1 Malaya.
- Trigonidium** Lindl. Orchidaceae (II. 18). 9 trop. Am.
- Trigonocapnos** Schlechter. Papaveraceae (III). 1 S. Afr.

- Trigonocaryum** Trautv. Boraginaceae (IV. 3). 1 Caucasus.
- Trigonochlamys** Hook. f. (*Santiria* p.p. *EP.*). Burseraceae. 1 Mal. Pen.
- Trigonopleura** Hook. f. Euphorbiaceae (A. II. 5). 1 Malay Peninsula.
- Trigonosciadium** Boiss. (*Heracleum* p.p. *BH.*). Umbell. (III. 6). 2 W. As.
- Trigonospermum** Less. Compositae (5). 3 S. Mexico.
- Trigonostemon** Blume. Euphorbiaceae (A. II. 5). 12 Indomal.
- Trigonotis** Stev. Boraginaceae (IV. 4). 16 mid and S.E. As.
- Triguera** Cav. Solanaceae (2). 1 S. Spain, Algeria.
- Trigyneia** Schlecht. Anonaceae (1). 11 trop. Am., W. I
- Trilepisium** Thou. Inc. sed. 1 Madag.
- Trilisa** Cass. Compositae (2). 2 Atl. U.S.
- Trilix** L. = *Prockia* P. Br. (Flacourt.).
- Trillium** L. Liliaceae (VII). 15 E. As., N. Am. *Cf.* Paris. Cult.
- Trilocularia** Schlechter. Balanopsidaceae. 1 New Caled.
- Trimenia** Seem. Monimiaceae. 1 Fiji.
- Trimeria** Harv. Flacourtiaceae (9). 4 S. and trop. Afr.
- Trimeza** Salisb. Iridaceae (II). 6 W.I., S. Am.
- Trimorpha** Cass. (*Erigeron* p.p.). Compositae (3). 15 Eur., As., Afr.
- Trimorphopetalum** Baker. Geraniaceae. 1 Madag.
- Trineomalee wood**, *Berrya Ammonilla* Roxb.
- Trineuron** Hook. f. = *Abrotanella* Cass. (Comp.).
- Trinia** Hoffm. Umbelliferae (III. 5). 12 Eur., N. As., Medit. (1 Brit.).
- Triniella** Calest. (*Trinia* p.p.). Umbelliferae (III. 5). 3 S.E. Eur.
- Triniochloa** Hitchcock. Gramineae (9). 3 Mexico to Ecuador.
- Triodia** R. Br. Gramineae (10). 20 temp., and Am. trop. 1 Brit.
- Triodon** DC. (*Diodia* p.p. *EP.*). Rubiaceae (II. 10). 5 trop. Am.
- Triolena** Naud. Melastomaceae (1). 5 W. trop. Am.
- Triomma** Hook. f. Burseraceae. 1 Malay Penins., Sumatra.
- Triopteris** L. Malpighiaceae. 3 trop. Am., W.I.
- Triorchos** Small (*Cyrtopodium* p.p.). Orchidaceae (II. 10). 1 N. Am.
- Triosteum** L. Cyrifoliaceae. 5 Himal., E. As., N. Am.
- Tripetaleia** Sieb. et Zucc. (*Elliottia* *BH.*). Eric. (I. 1). 2 Japan.
- Tripetalum** K. Schum. Guttiferae (V). 1 New Guinea.
- Triphasia** Lour. Rutaceae (V). 1 India.
- Triphlebia** Baker. Polypodiaceae. 3 Malaya, Phil. Is.
- Triphora** Nutt. (*Pogonia* *BH.*). Orchidaceae (II. 2). 8 N. and trop. Am.
- Triplachne** Link. Gramineae (8). 1 Sicily.
- Triplaris** Loeff. Polygonaceae (III. 2). 10 trop. S. Am. All are said to harbour ants in their hollow stems (*cf.* *Cecropia*). Fl. cyclic (see fam.), dioecious. The 3 outer P-leaves grow into long wings which project beyond the fr. and may aid in distribution.
- Triplasandra** Seem. (*Tetraplasandra* p.p. *EP.*). Aral. (1). 4 Hawaii.
- Triplasis** Beauv. (*Triodia* p.p. *EP.*). Gramineae (10). 3 N. Am.
- Tripleurospermum** Sch.-Bip. = *Matricaria* Tourn. (Comp.).
- Triplocephalum** O. Hoffm. Compositae (4). 1 E. trop. Afr.
- Triplochiton** K. Schum. Sterculiaceae. 4 trop.
- Triplostegia** Wall. ex DC. Valerianaceae (Dips. *BH.*). 2 Himal. China.

- Triplotaxis** Hutchinson. Compositae (1). 2 trop. Afr.
- Tripodandra** Baill. (*Rhaptonea* p.p.). Menispermaceae. 1 Madag.
- Tripogon** Roth. Gramineae (11). 10 trop. As., Afr.
- Tripolium** Nees = *Aster* Tourn. p.p. (Comp.).
- Tripsacum** L. Gramineae (1). 3 warm N. Am. *T. dactyloides* L. is a fodder; it is like *Euchlaena*, but with ♂ and ♀ fls. in same infl.
- Tripteris** Less. Compositae (9). 35 S. Afr. to Arabia. Fr. 3-winged.
- Tripterocalyx** Hook. (*Abronia* p.p.). Nyctaginaceae. 5 N. Am.
- Tripterodendron** Radlk. Sapindaceae (1). 1 Brazil.
- Tripterygium** Hook. f. Celastraceae. 2 E. As.
- Triptilion** Ruiz et Pav. Compositae (12). 16 Chili.
- Triptolemea** Mart. = *Dalbergia* L. p.p. (Legum.).
- Triraphis** R. Br. Gramineae (10). 10 Austr., Afr.
- Triscenia** Griseb. Gramineae (4). 1 Cuba.
- Trisciadia** Hook. f. (*Coelospermum* p.p. EP.). Rubi. (11. 9). 1 Penang.
- Triscyphus** Taub. ex Warm. Burmanniaceae. 1 Rio de Janeiro.
- Trisema** Hook. f. (*Hibbertia* p.p. EP.). Dilleniaceae. 4 New Caled.
- Trisepalum** C. B. Clarke. Gesneriaceae (1). 3 Burma.
- Trisetaria** Forsk. Gramineae (8). 2 Egypt, Abyssinia.
- Trisetum** Pers. Gramineae (9). 55 temp. *T. flavescens* Beauv. in Brit., a good forage grass.
- Trismeria** Fée. Polypodiaceae. 2 trop. Am., Paraguay.
- Tristachya** Nees. Gramineae (9). 10 trop., exc. Austr.
- Tristagma** Poepp. et Endl. Liliaceae (1V). 5 Chili, Patagonia.
- Tristania** R. Br. Myrtaceae (11. 1). 22 Malaya to New Caled. (brush box).
- Tristellateia** Thou. Malpighiaceae (1). 15 palaeotrop., esp. Madag.
- Tristemma** Juss. Melastomaceae (1). 12 trop. Afr., Madag., Masc.
- Tristicha** Thou. Tristichaceae. 4 trop.
- Tristichaceae** (cf. Willis in *Linn. Soc. Journ.* XLIII. p. 49) (*Podostemaceae* p.p.). 3 gen., 6 sp. trop. Herbs of rapid water in hill streams (cf. *Podostemaceae*) with creeping thread-like roots giving off (exc. *Lawia*, where the primary axis is flattened into a thallus and gives off) large numbers of secondary shoots with minute delicate simple exstip. l. P 3—5 or (3—5), reg., sepaloid, A 3, 5, ∞, or 1, G (2—3) 2—3-loc. with ∞ anatr. ov. Caps. *Genera*: *Tristicha*, *Lawia*, *Weddellina*.
- Tristichocalyx** F. Muell. (*Legnephora* p.p.). Menispermaceae. 2 Austr.
- Tristira** Radlk. Sapindaceae (1). 2 Malaya.
- Tristiropsis** Radlk. Sapindaceae (1). 4 Mariannes, Solomons, N.G.
- Tristis** (Lat.), dull coloured.
- Trisyngyne** Baill. Euphorbiaceae (A. 11. 7). 2 New Caled.
- Tritaxis** Baill. Euphorbiaceae (A. 11. 3). 4 Indomal.
- Triteleia** Dougl. (*Brodiaea* p.p.). Liliaceae (1V). 20 W. Am.
- Trithrinax** Mart. Palmae (1. 2). S. Am.
- Trithuria** Hook. f. (*Juncella* EP.). Centrolepidaceae. 2 Austr., N. Z.
- Triticum** L. Gramineae (12). 15 Medit., Eur., W. As. Spikelet 2—5-flowered, in a dense spike. 3 sp. of wheat, with numerous subspecies, are cult. but the parent forms cannot be traced, and there is dispute as to the specific rank of these forms. *T. monococcum* L. is the one-grained wheat or small spelt (the grains of spelt do not fall out of the glumes when threshed), *T. polonicum* L. the Polish wheat

and *T. sativum* Lam. the wheat proper, with 3 races, the ordinary spelt, the earliest cultivated (*T. spelta* L.), the 2-grained wheat (*T. dicoccum* Schr.), and *T. sativum tenax*, of which there are 4 sub-races, (1) the hard or flint wheat (*T. durum* Desf.) used for macaroni, &c., (2) the turgid or rivet wheat (*T. turgidum* L.), (3) the dwarf wheat (*T. compactum* Host.), and (4) the common wheat (*T. vulgare* Vill.) in ∞ vars. All are sometimes considered as forms of *T. vulgare*. Cf. Percival, *Agric. Botany*; Körnicke and Werner, *Handb. d. Getreidebaues*, Bonn, 1885, &c.

Tritoma Ker-Gawl. = *Kniphofia* Moench (Lili.).

Tritomopterys Niedenzu (*Gaudichaudia* p.p.). Malpighiaceae (1). 8 Mexico, C. Am.

Tritonia Ker-Gawl. Iridaceae (III). 30 S. and trop. Afr. Cult. orn.

Triumfetta Plum. ex L. Tiliaceae. 75 trop. Herbs or shrubs, often with extrafloral nectaries at base of l. On each internode of infl. are usu. at least three 3-flowered dichasial cymes. The first and oldest is opp. to the l.; the rest stand alt. right and left between the first and the l. Fruit with hooked spines (animal distr.).

Triuridaceae (EP., BH.). Monocots. (Triuridales; Apocarpae BH.). 2 gen., 40 sp., trop. As., Afr., Am. Little saprophytes with scale l. and small fls. on long stalks, ♀ or ♂ ♀. P 3—8, corolline, valvate, A in ♂ 3, 4 or 6, G in ♀ ∞ , each with 1 basal ov. and 1 style. Thick pericarp; much endosp. *Genera*: *Sciaphila*, *Triuris*.

Triuridales. The 3rd order of Monocots.

Trivalvaria Miq. (*Polyalthia* BH.). Anonaceae (2). 4 Malaya.

Trivial (name), specific.

Trixago Hall = *Stachys* Tourn. (Lab.).

Trixago Stev. = *Bartsia* L. p.p. (BH.) = *Bellardia* All.

Trixis P. Br. Compositae (12). 35 warm Am.

Trizeuxis Lindl. Orchidaceae (II. 19). 1 Colombia.

Trochetia DC. Sterculiaceae. 8 St Helena, Mauritius, Madag.

Trochiscanthes Koch. Umbelliferae (III. 5). 1 S. Eur.

Trochlear, pulley-shaped.

✓ **Trochocarpa** R. Br. Epacridaceae (3). 6 Austr.

Trochocodon Candargy. Campanulaceae (I. 1). 1 Greece.

Trochodendraceae (EP.; *Magnoliaceae* p.p. BH.). Dicots. (Archichl. Ranales). 3 gen., 6 sp., E. As. Trees or shrubs with alt. exstip. l., and fls. sol. or in racemes, ♀ or monoecious, naked. A ∞ , G 5— ∞ . Caps. or achenes. *Chief genus*: *Trochodendron*.

Trochodendron Sieb. et Zucc. Trochodendraceae. 1 Japan.

Trochomeria Hook. f. Cucurbitaceae (3). 12 Afr.

Trochomeriopsis Cogn. Cucurbitaceae (2). 1 Madag.

Trollius L. Ranunculaceae (2). 12 N. temp. and Arctic. (*T. europaeus* L., globe-flower, in Brit.) The 'sepals' completely cover in the fl. Fl. homogamous, and regularly fert. itself.

Troostwykia Miq. Connaraceae. 1 Sumatra.

Tropaecolaceae (EP.; *Geraniaceae* p.p. BH.). Dicots. (Archichl. Geraniales). Only genus *Tropaecolum* (q.v.).

Tropaecolum L. Tropaecolaceae. 25 S. Am., Mexico (*Nasturtium* or Indian cress of gardens). Most are herbs climbing by sensitive petioles (cf. *Clematis*), with cpd. or peltate l.; some have tubers at

- base of stem. Fl. $\cdot$ with post. spur formed by axis under post. sepal.
 K 5, imbr.; C 5; A 4+4; $\underline{G}$ (3), 3-loc. with 1 ovule in each. anatr.,
 pend. with micropyle facing upwards and outwards; style simple.
 Schizocarp, with no beak. Seed exalbum.
- Trophis** P. Br. Moraceae (1). 6 trop. Am., W.I.
- Trophisomia** Roj. Moraceae (1). 1 Argentina.
- Tropical regions**, cf. Floral; -**zone**, cf. Zones of Veg.
- Tropidia** Lindl. Orchidaceae (11. 2). 8 Indomal., Polynesia.
- Tropidocarpum** Hook. Cruciferae (3). 2 Calif.
- Tropidopetalum** Turcz. Inc. sed. 1 Java.
- Tropophytes**, pl. xero. at one period of the year, hygrophytic at another,
e.g. bulbs, many tubers, *Anastatica* and other annuals, *Bowiea*, *Testudinaria*, &c., and trees that drop the l. *e.g.* *Bombacaceae*; see Caatinga.
- Troximon** Nutt. Compositae (13). 25 W. Am.
- True fruit**, product of ovary only; -**reproduction**, by special cells.
- Trujanoa** La Llave. Euphorbiaceae (inc. sed.). 1 Mexico.
- Trumpet flower**, *Bignonia*, *Datura*, &c.; -**reed** (W. I.), *Arundo*;
 -**tree**, *Cecropia*; -**weed** (Am.), *Eupatorium purpureum* L.
- Trumpets** (Am.), *Sarracenia flava* L.
- Truncate**, with broad straight end, as if bitten off.
- Tryblicocalyx** Lindau. Acanthaceae (IV. B). 1 Guatemala.
- Trymalium** Fenzl. Rhamnaceae. 5 W. Austr.
- Trymatococcus** Poepp. et Endl. Moraceae (1). 5 trop. S. Am., Afr.
- Tryphostemma** Harv. Passifloraceae. 10 Afr.
- Tschudya** DC. = *Oxymeris* DC. (*BH.*) = *Leandra* Raddi (Melast.).
- Tsimatimia** Jumelle et Perrier (*Rheedia* p.p.). Guttiferae (v). 1 Madag.
- Tsuga** Carr. Coniferae (Pinaceae 14; see C. for gen. char.). 9 As.,
 N. Am.: evergreen trees with habit of *Picea*. *T. canadensis* Carr. is
 the hemlock spruce, found in a large part of N. Am. and valued for
 its wood, bark (used in tanning), pitch (canada pitch), &c. For *T.*
Douglasii Carr. (Douglas fir) see *Pseudotsuga*.
- Tsusiophyllum** Maxim. Ericaceae (I. 2). 1 Japan.
- Tube**, the concrescent part of K or C.
- Tuber**, a swollen stem or root in which reserves are stored, *Arum*,
Basellaccae, *Begonia*, *Bravoa*, *Corydalis*, *Dahlia*, *Dioscorea*, *Helianthus*,
Ipomoea, *Monotropa*, *Orchidaceae*, *Orchis*, *Oxalis*, *Paeonia*, *Scirpus*,
Sinningia, *Tamus*, *Thladiantha*, *Ullucus*.
- Tuberaria** Spach (*Helianthemum* p.p. *BH.*). Cistaceae. 12 Medit.,
 Eur.
- Tubercle**, Leguminosae; -**culate**, with knobby projections.
- Tuberoze**, *Polianthes tuberosa* L.
- Tuberostyles** Steetz. Compositae (2). 1 Colombia.
- Tubiflora** Gmel. (*Elytraria* Vahl). Acanthaceae (1). 4 trop., sub trop.
- Tubiflorae**. The 6th order (*EP.*) of Sympetalae; the 4th (Warming).
- Tubocapsicum** Makino (*Capsicum* p.p.). Solanaceae (2). 1 Japan.
- Tubutubua** Post et O. Ktze. = *Tapeinochilus* Miq. (Zingib.).
- Tuerckheimia** Dammer. Palmae (nomen). 1 Guatemala.
- Tuerckheimocharis** Urb. Scrophulariaceae (11. 5). 1 S. Domingo.
- Tula** Adans. Rubiaceae (inc. sed.). 1 Peru.
- Tulasnea** Naud. Melastomaceae (1). 2 Brazil.

- Tulbaghia** Heist. = *Agapanthus* L'Herit. (Lili.).
- Tulbaghia** L. Liliaceae (IV). 12 trop. and S. Afr.
- Tulip**, *Tulipa*; **Cape -**, *Haemanthus*; **-tree**, *Liriodendron*, (Ceylon) *Thespesia*, (W.I.) *Paritium*.
- Tulipa** L. Liliaceae (V). 50 N. temp. |* (tulip), esp. on the steppes of C. As. The seeds are flat, and the capsule, even when the fl. is pend., stands erect (censer-mechanism). Many cult. orn. fl.
- Tulipastrum** Spach (*Magnolia* p.p.). Magnoliaceae. 2 N. Am.
- Tumamoca** Rose. Cucurbitaceae (2). 1 Arizona.
- Tumboa** Welw. = *Welwitschia* Hook. f. (Gnet.).
- Tumescant**, somewhat tumid; **tumid**, swollen.
- Tumionella** Greene (*Aplopappus* p.p.). Compositae (3). 1 S.W. U.S.
- Tunaria** O. Ktze. Solanaceae (4). 1 Bolivia.
- Tundras**, frigid deserts, char. by scanty covering of the ground, and xero. char. of veg. Mosses and lichens predominate.
- Tunica** Hall. Caryophyllaceae (II. 2). 20 Medit.
- Tunicated bulb**, with l. completely enwrapping, as in onion.
- Tupa** G. Don = *Lobelia* Plum. p.p. (Campan.).
- Tupeia** Blume = *Henslowia* Blume (Santal.).
- Tupeia** Cham. et Schlecht. Loranthaceae (I). 1 New Zealand.
- Tupelo**, *Nyssa*.
- Tupidanthus** Hook. f. et Thoms. Araliaceae (I). 1 Khasias to Burma.
- Tupistra** Ker-Gawl. Liliaceae (VII). 5 E. Indomal., China. Cult. orn.
- Turbinate**, cone-shaped.
- Turetta** Vell. Inc. sed. 1 Brazil.
- Turf**, an association in which Gramineae dominate.
- Turgenia** Hoffm. = *Caucalis* L. p.p. (Umbell.).
- Turgeniopsis** Boiss. (*Caucalis* p.p. *BH.*). Umbell. (III. 2). 1 W. As.
- Turgidity**, tension from content of water.
- Turion**, a scaly sucker or shoot from the ground.
- Turkey-berry** (W.I.), *Solanum*; **-oak**, *Quercus Cerris* L.; **-red**, *Peganum Harmala* L.
- Turmeric**, *Curcuma longa* L.
- Turnera** Plum. ex L. Turneraceae. 70 trop. and subtrop. Am.
- Turneraceae** (EP., *BH.*). Dicots. (Archichl. Parietales; Passiflorales *BH.*). 6 gen., 105 sp., chiefly trop. Am. and Afr. Trees, shrubs and herbs, with alt. usu. exstip. l., whose teeth are sometimes glandular. Fls. usu. sol. in the leaf-axils, ♀, reg., perig. K 5, imbr., usu. with a hemispherical swelling on inner side; C 5; A 5; G (3), 1-loc. with parietal plac.; styles 3; ov. 3—∞, anatr. Fr. a caps., loculic. Seed with funicular aril, and copious endosp. Nearly all have dimorphic heterostyled fls. (cf. *Primula*). Many have extrafloral nectaries. Self-fert. occurs in absence of insect visits, by the C withering and pressing anthers and stigmas together. *Chief genus*: *Turnera*.
- Turuip**, *Brassica campestris* L.; **Indian -**, *Arisaema*; **prairie -**, *Psoralea*.
- Turnsole**, *Chrozophora tinctoria* A. Juss.
- Turpentine**, the balsams or fluid resins of the *Coniferae*, *Burseraceae*, &c.; when distilled oil of turpentine passes over, and resin is left,

- Coniferae*, *Abies*, *Picea*, *Pinus*; **Chian-**, *Pistacia*; **oil of -**, *Pinus*; **Strasburg -**, *Abies*; **- tree**, *Bursera*; **Venice -**, *Larix*.
- Turpinia** Vent. Staphyleaceae. 10 trop. As., Am.
- Turraea** L. Meliaceae (III). 50 palaeotrop.
- Turraeanthus** Baill. Meliaceae (III). 4 W. trop. Afr.
- Turrigera** Decne. Asclepiadaceae (II. 1). 2 temp. S. Am.
- Turritis** Tourn. ex L. (*Arabis* p.p. *BH.*). Cruciferae (4). 5 N. temp., Austr.
- Turtle grass** (W.I.), *Thalassia*; **- head** (Am.), *Chelone*.
- Tuscarora rice**, *Zizania aquatica* L.
- Tussacia** Reichb. Gesneriaceae (I). 5 trop. Am., W.I.
- Tussacia** Willd. Inc. sed. 1 S. Am.
- Tussilago** (Tourn.) L. Compositae (8). 1 Eur. (incl. Brit.), N. Afr., As., *T. Farfara* L., colt's foot. The fls. appear in spring before the l.; the pl. multiplies and hibernates by underground offshoots. The fl.-head is monoec.; in the centre are about 40 ♂ fls., surrounded by about 300 ♀. The ♂ retain the style, as usual, to act as pollen-presenter, but it has no stigmas. Honey is secreted in the ♂ fls., but not in the ♀. The ♀ fls. being the outer ones are ripe before the ♂, and self-fert. is almost impossible.
- Tutcheria** Dunn. Theaceae. 2 China.
- Tutsan**, *Hypericum*.
- Tutuca** Molina. Ericaceae (inc. sed.). 2 Chili.
- Tway-blade**, *Listera*.
- Tweedia** Hook. et Arn. = *Oxypetalum* R. Br. (Asclep.).
- Twig-rush** (Am.), *Cladium*.
- Twin flower** (Am.), *Linnaea*; **- leaf**, *Jeffersonia*.
- Twining plants**, cf. Climbing Plants.
- Twisted stalk** (Am.), *Streptopus*; **-ing of fl. stalk**, *Downingia*, *Fumaria*, *Impatiens*, *Lobelia*, *Melanthaceae*, *Orchidaceae*; **of leaf**, *Alstroemeria*, *Bomarea*; **of stem**, *Pandanus*; **of anther theca**, *Cochlostema*, *Columelliaceae*, *Cucurbitaceae*.
- Twitch grass**, *Agropyron repens* Beauv.
- Tydaea** Decne. = *Isoloma* Decne. (*BH.*) = *Kohleria* Regel p.p.
- Tyle berry** (W.I.), *Jatropha multifida* L.
- Tylecarpus** Eng. Icacinaceae. 1 New Guinea.
- Tylodontia** Griseb. (*Astephanus* p.p.). Asclepiadaceae (II. 1). 1 Cuba.
- Tyloglossa** Hochst. = *Justicia* Houst. p.p. (Acanth.).
- Tylophora** R. Br. Asclepiadaceae (II. 3). 50 palaeotrop.
- Tylophoropsis** N. E. Br. (*Tylophora* p.p.). Asclepiad. (II. 1). 2 E. Afr.
- Tylostemon** Engl. Lauraceae (II. 1). 21 trop. Afr.
- Tynanthus** Miers. Bignoniaceae (1). 10 trop. S. Am.
- Type**, the ideal repres. of a group; **- specimen**, that from which the original description of a sp. was drawn up.
- Typha** L. Typhaceae. 12 temp. and trop., in marshes; 2 in Brit. (reed-mace, cat's-tail, bulrush). The lower part of the stem is a thick rhiz.; the upper projects high out of the water (l. 2-ranked) and bears the infl., a dense spike, divided into two parts, the upper ♂ (usu. yellow), the lower ♀ (brown). Fls. naked: ♂ fl. of 2-5 sta., the connective projecting beyond the anthers; pollen in tetrads; fl. en-

closed in a number of hairs: ♀ similarly enclosed, of 1 cpl. with 1 pend. ov., micropyle towards the base or ventral side of the ovary. Fl. anemoph. Achenes covered by the long downy hairs mentioned, which aid in distr. Seed album.; embryo straight.

Typhaceae (EP.; BH. incl. *Sparganiaceae*). Monocots. (Pandanales; Nudiflorae BH.). Only genus *Typha* (g.v.).

Typhonium Schott. Araceae (VII). 15 Indomal.

Typhonodorum Schott. Araceae (V). 2 Madag.

Tyrinnus Cass. Compositae (II). 1 W. As., S. Eur.

Tysonia Bolus. Boraginaceae (IV. 1). 1 S.E. Afr.

Tysonia F. Muell. (*Neotysonia* Dalla Torre et Harms). Comp. (4). 1 Austr.

Tzellemtinia Chiov. Rhamnaceae. 1 E. trop. Afr.

Uapaca Baill. Euphorbiaceae (A. I. 1). 13 trop. Afr., Madag.

Ubochea Baill. Verbenaceae (I). 1 Cape Verde Is.

Ucria Targ. Inc. sed. Nomen lapsum. Cf. Index Kewensis.

Ucriana Spreng. (*Augusta* Pohl). Rubiaceae (I. 3). 1 E. Brazil.

Udora Nutt = *Elodea* Michx. (Hydrochar.).

Uebelina Hochst. Caryophyllaceae (II. 1). 2 E. Afr.

Uechtrizia Freyn. Compositae (12). 1 Armenia.

Ugni Turcz. (*Myrtus* p.p. BH.). Myrtaceae (I). 11 Andes, Mexico. Ed. fr.

Ule, *Castilloa*.

Uleanthus Harms. Leguminosae (III. 1). 1 Amazon valley.

Ulearum Engl. Araceae (VII). 1 Upper Amazon valley.

Uleophytum Hieron. Compositae (2). 1 Peru. Climber.

Ulex L. Leguminosae (III. 3). 20 W. Eur., N. Afr.; 3 in Brit., *U. europaeus* L., *U. nanus* Forst. and *U. Gallii* Planch., the gorse, furze, or min, covering large areas, esp. on heaths. The l. are reduced in size, and many branches reduced to green spines (xerophytism). The fls. explode like *Genista*, and the fr. explodes by the twisting up of its valves in dry air. The seeds in germination show interesting transition-stages from the usual compound l. seen in the order to the needle-l. of the mature pl. (cf. *Acacia*).

Uliginosus (Lat.), growing in swamps.

Ullucus Caldas. Basellaceae. 1 Andes, *U. tuberosus* Caldas. Lat. branches of the rhiz. swell into tubers like potatoes, and are used as food.

Ulmaceae (EP.; *Urticaceae* p.p. BH.). Dicots. (Archichl. Urticales). 13 gen., 130 sp., trop. and temp. Trees with sympodial stems, bearing 2-ranked simple often asymmetrical l. with stip. Fls. usu. in cymose clusters, generally unisexual. P 4—5, free or united, sepaloïd, theoretically belonging to two whorls; A 4—5, opp. the perianth-l., in two whorls; $\bar{G}$ rudimentary in ♂ fl., in the ♀ of (2) cpls., sometimes 2-loc. but usu. 1-loc., the second loc. aborting; ov. 1 per loc., anat. or amphitr., pend., style linear or bifid. Nut, samara or drupe. Seed usu. with no endosp. The wood of many is useful. Chief genera: *Ulmus*, *Celtis*.

Ulmaria (Tourn.) Hill (*Spiraea* p.p. BH.). Rosaceae (III. 4). 10 N. temp. *U. palustris* Moench (*Spiraea Ulmaria*, meadow-sweet) and *U. Filipendula* Hill (*S. Filipendula*, dropwort) in Brit.

Ulmus (Tourn.) L. Ulmaceae. 18 N. temp. and Mts. of trop. Asia.

U. montana With. (wych elm) and *U. campestris* L. (elm) in Brit. Growth sympodial, the term. bud being suppressed. L asymmetrical, one side larger than the other (*cf.* Begonia). The fls. are ♂ and come out before the l. as little reddish tufts, each a short axis with a number of l., beginning 2-ranked at the base and going over to 5-ranked above. There are no fls. in the axils of the lowest 10 or 12; in the axils of the upper l. are fls. arranged in small dich. cymes (*cf.* Betulaceae), which are reduced, in *U. campestris* and others, to the one central fl. Each fl. has P_4-8 and as many sta. with 1-loc. ovary. [See Chalazogamiae.] Fr. a samara. The elm supplies a valuable timber.

Umbel, an infl. in which the stalks of the fls. all spring from the top of the main stalk.

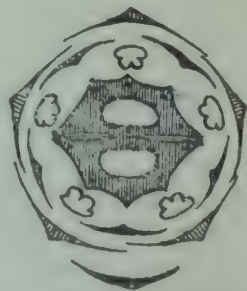
Umbellales (BH.). The 15th order of Polypetalae.

Umbelliferae (EP., BH.). Dicots. (Archichl. Umbelliflorae). 200 gen., 2700 sp., cosmop., chiefly N. temp. Many in Brit. Most can be recognized by habit; herbs with stout stems, hollow internodes, and alt. exstip. sheathing l. with their blades much divided pinnately. A few, *e.g.* Hydrocotyle and Bupleurum, have entire l. Infl. usu. a cpd. umbel. At the top of the stalk of each partial umbel, an invol. of bracts is often found (the bracts of the outer fls.), and a similar larger invol. often occurs at the top of the main stalk bearing the cpd. umbel; the latter is sometimes termed the involucre in contradistinction to the *involucels* of the partial umbels. A term. fl. often occurs, *e.g.* in Daucus. In a number of genera (*e.g.* Astrantia, Hydrocotyle) simple umbels occur, cymose in type (as the non-centripetal order of opening of fls. shows) and often arranged in cymose groupings, *e.g.* in Sanicula. Eryngium has a cymose head. Some sp. of Xanthosia and Azorella have such cymose infls. reduced to single fls., and these infls. have commonly invols. of bracts.

Fl. usu. ♂ and reg. (see below), epig. K 5, usu. very small, the odd sepal post.; C 5 (rarely 0), usu. white or yellow; A 5, intr.; G (2), antero-post., 2-loc.; in each loc. one pend. ovule, anat., with ventral raphe. On top of the ovary is an epig. disc, prolonged into two short styles.

The massing of the fls. into dense infls. makes them conspic. (*cf.* Compositae), and this is aided by the zygomorphism of the C often seen; the outer petals of the outer fls. are drawn out (*cf.* Cruciferae) so as to form a sort of ray. Honey is secreted by the disc; it is accessible to all insects (fam. in class A). The chief visitors are flies; fls. very protandrous, the ♂ stage being most commonly over before the ♀ begins.

The ovary ripens into a very char. fruit, a dry schizocarp, which splits down the septum between cpls. into 2 mericarps, each containing one seed. The two are generally held together at first by a thin stalk (*carpopphore*) running up between them. The structure of the pericarp is of great importance in determining the gen. It is nearly always necessary to have ripe fr. in order to identify one of the U. The shape is often im-



Floral diagram.

portant; the outer surface of each mericarp has generally 5 projecting *primary ridges*, two of which (the *lateral ridges*) are at the edges where the splitting takes place. Between these are sometimes *secondary ridges*, 4 to each mericarp. In the furrows are often found oil-cavities (seen as small openings in cross-section) known as *vittae*. The seed is often united to the pericarp; it is album. with small embryo in oily endosp., which is usu. cartilaginous in texture. The shape of the endosp. as seen in cross-section is of importance; it may be crescentic, or ventrally grooved, or concave on ventral side. The fr. often shows adaptations for distr.; in many (*e.g.* *Heracleum* and allies) the mericarp is thin and flat, suited to wind-carriage; in others (*e.g.* *Daucus*) it has hooks: See also *Scandix*.

Many U. are economically useful, but as a rule they are poisonous. See *Daucus* (carrot), *Pastinaca* (parsnip), *Apium* (celery), *Crithmum* (samphire), *Foeniculum* (fennel), *Archangelica*, *Carum*, *Ferula*, *Pimpinella*, *Coriandrum*, *Petroselinum*, &c.

Classification and chief genera (after Engler):

I. *HYDROCOTYLOIDEAE* (fr. with no free carpophore, and woody endocarp: *vittae* none or in main ribs).

1. *Hydrocotyleae* (fr. with narrow surface of union, lat. flattened): *Hydrocotyle*, *Azorella*.
2. *Mulineae* (fr. with flattened or rounded back; ✱): *Bowlesia*.

II. *SANICULOIDEAE* (endocarp soft, exocarp rarely smooth; style long with capitate stigmas, surrounded by ring-like disc; *vittae* various).

1. *Saniculeae* (ov. 2-loc.; fr. 2-seeded, with broad surface of union; *vittae*): *Eryngium*, *Astrantia*, *Sanicula*.
2. *Lagoeciae* (ov. 1-loc.; fr. 1-seeded; *vittae* indistinct); *Lagoecia*.

III. *APIOIDEAE* (endocarp soft, sometimes hardened by sub-epidermal fibre layers; style on apex of disc; *vittae*).

A. Primary ridges projecting, the lat. sometimes wing-like; no secondary ridges.

a. Secondary umbels each with 1 or few ♀ fls. surrounded by ♂.

1. *Echinophoreae* (fr. enclosed by hardened stalks of ♂ fls.): *Echinophora*.

b. Fls. all ♀, or irreg. polygamous.

a. Seed at surface of union deeply forked or hollow.

2. *Scandicineae* (parenchyma around carpophore with crystal layer): *Chaerophyllum*, *Anthriscus*, *Torilis*.

3. *Coriandreae* (without crystal layer; fr. ovate-spherical, nut-like, rarely long, with woody sub-epidermal layer): *Coriandrum*.

4. *Smyrnieae* (narrow surface of union, mericarps rounded outwards): *Smyrnum*, *Conium*.

β. Seeds flattened at surface of union.

5. *Ammineae* (primary ridges all alike; seed semicircular in section): *Bupleurum*, *Apium*, *Petroselinum*, *Carum*, *Pimpinella*, *Seseli*, *Foeniculum*, *Oenanthe*, *Ligusticum*.

6. *Peucedaneae* (lat. ribs much broader, forming wings; seed narrow in section): *Angelica*, *Ferula*, *Peucedanum*, *Pastinaca*.

B. Lat. ridges equal or larger than primary; vittae in furrows or under secondary ridges.

7. *Laserpitieae* (secondary ridges very marked, often extended into broad undivided or wavy wings): *Laserpitium*, *Thapsia*.

8. *Dauceae* (ribs with spines): *Daucus*.

Umbelliflorae. The 30th order (*EP.*) of Archichlamydeae; the 23rd (Warming) of Choripetalae.

Umbellularia Nutt. Lauraceae (I). 1 Calif., *U. californica* Nutt., the California olive, with useful timber.

Umbilicate, peltate, or depressed in centre.

Umbilicus DC. (*Cotyledon* p.p.). Crassulaceae. 10 Medit.

Umbonate, with central boss.

Umbraculiferous, like an expanded umbrella.

Umbrella fr, *Sciadopitys*; -**grass** (Am.), *Fuirena*; -**leaf** (Am.), *Diphyllia*; -**tree**, *Acacia*, *Magnolia*.

Umbrinus (Lat.), umber-coloured.

Umbrosus (Lat.), of shady places.

Umtiza Sim. Leguminosae (II. 3). 1 S. Afr.

Unamia Greene (*Aster* p.p.). Compositae (3). 4 mid atl. U.S.

• **Uncaria** Schreb. (*Ourouparia* Aubl.). Rubiaceae (I. 6). 35 trop. They climb by hooks, which are metam. infl.-axes, and sensitive to continued contact; after clasping they enlarge and become woody. *U. Gambier* Roxb. (gambir; Straits Sett.) is a valuable source of tan.

Uncarina Stapf (*Harpagophytum* p.p.). Pedaliaceae. 5 Madag.

Uncariopsis Karst. (*Schradera* p.p. *EP.*). Rubi. (I. 6). 1 Columbia.

Uncasia Greene (*Eupatorium* p.p.). Compositae (2). 30 N. Am.

Uncate, **uncinate**, hooked.

Uncifera Lindl. Orchidaceae (II. 20). 2 Khasias.

Uncinia Pers. Cyperaceae (III). 30 ✱, Mexico, W.I. The axis of origin of the fl. projects beyond the utricle in the form of a long hook, serving as a means of dispersal for the fr.

Undershrub, a low-growing woody plant, e.g. *Calluna*.

Undulate, wavy.

Ungeria Schott et Endl. Sterculiaceae. 1 E. Austr., Norfolk I.

Ungernia Bunge. Amaryllidaceae (I). 1 Persia.

Ugnadia Endl. Sapindaceae (II). 1 Texas, Mexico (Mex. buckeye).

Ungiculate, **ungulate**, clawed.

Uni- (Lat. pref.), one; -**corn plant** (Am.), *Martynia*; -**foliolate**, with one leaflet, *Berberis*, *Citrus*; -**lateral**, -**locular**, &c.; -**parous**, monochasial; -**sexual** (fl.), with sta. or cpls.

Unifolium Hall (*Maianthemum* Weber). Liliaceae (VII). 10 N. Am.

Uniola L. Gramineae (10). 5 Am. Useful pasture. Cult. orn.

Unisexuales (B.H.). The 7th series of Incompletæ.

Unona L. f. Anonaceae (I). 50 trop., As., Afr., some climbing by recurved hooks which are infl.-axes. Fr. an aggregate of stalked berries, constricted between the seeds like a lomentum.

Unonopsis R. E. Fries (*Trigynia* p.p.). Anon. (I). 10 Mex., trop. Am.

Upas tree, *Antiaris toxicaria* Lesch.

Urachne Trin. = *Oryzopsis* Michx. (Gram.).

Uragoga L. (*Psychotria* p.p. *BH.*, *Cephaelis* Sw.). Rubiaceae (II. 5). 130 trop. *U.* (C.) *Ipecacuanha* Baill. (*P. Ipecacuanha* Stokes) is the ipecacuanha (Brazil), a herb with decumbent stem, and roots thickened somewhat like rows of beads. Root used in medicine.

Uralepsis Nutt. = *Triodia* R. Br. p.p. (Gram.).

Urandra Thw. (*Lasianthus* p.p.). Icacinaceae. 10 Indomal.

Uraria Desv. Leguminosae (III. 7). 12 palaeotrop.

Urbania Phil. Verbenaceae (I). 2 Chili.

Urbanodendron Mez (*Aydendron* p.p.). Lauraceae (II). 1 E. Brazil.

Urbanodoxa Muschler (*Cremolobus* p.p.). Cruciferae (I). 1 Peru.

Urbanosciadium H. Wolff. Umbelliferae (III. 4). 1 Peru.

Urbinella Greenman. Compositae (6). 1 Mexico.

Urbinia Rose (*Echeveria* p.p.). Crassulaceae. 3 Mexico.

Urceocharis × Mast. Hybrid *Urceolina* - *Eucharis* (*Gard. Chr.* 1892).

Urceola Roxb. Apocynaceae (II. 1). 8 E. Indomal.

Urceolate, urn-shaped.

Urceolina Reichb. Amaryllidaceae (I). 3 Andes.

Urechites Muell.-Arg. Apocynaceae (II. 1). 5 W.I., Florida.

Urelytrum Hack. Gramineae (2). 3 trop. and S. Afr.

Urena Dill. ex L. Malvaceae (3). 3 trop. and subtrop. Schizocarp, the individual cpls. provided with hooks. Useful fibre.

Urens (Lat.), stinging.

Urera Gaudich. Urticaceae (1). 22 trop. Stinging hairs powerful. Achene enclosed in persistent fleshy P. (pseudo-berry).

Urginea Steinh. Liliaceae (v). 40 Medit., Afr., India. *U. Scilla* Steinh. (*U. maritima* Baker, squill), large bulbs used in medicine.

Urmenetia Phil. (*Onoseris* p.p. *EP.*). Compositae (12). 1 Chili.

Urnularia Stapf (*Willughbeia*, &c. p.p.). Apocyn (I. 1). 5 Malaya.

Urobotrya Stapf. Opiliaceae. 4 trop. Afr.

Urochlaena Nees Gramineae (10). 2 S. Afr.

Urodesmium Naud. (*Pachyloma* DC.). Melastomaceae (1). 2 Brazil.

Uropappus Nutt. = *Microseris* D. Don, p.p. (Comp.).

Uropetalon Ker-Gawl. = *Dipcadi* Medic. p.p. (Lili.).

Urophyllum Wall. Rubiaceae (I. 7). 40 trop. Afr. to Japan.

Uroskinnera Lindl. Scrophulariaceae (II. 4). 2 C. Am., Mexico.

Urospatha Schott. Araceae (IV). 15 trop. S. Am.

Urospermum Scop. Compositae (13). 2 Medit.

Urostephanus Robinson et Greenman. Asclepiadaceae (II. 4). 1 Mexico.

Urostigma Gasp. = *Ficus* Tourn. p.p. (Mor.).

Urotheca Gilg. Melastomaceae (I). 1 E. trop. Afr.

Ursinea Gaertn. Compositae (10). 60 S. Afr., Abyssinia.

Urtica (Tourn.) L. Urticaceae (1). 30 temp. (nettles). Herbs with opp. l. and stips. (sometimes united in pairs between the petioles, as in Rubiaceae), usu. covered with stinging hairs. The various types of infl. are well shown in the 3 Brit. sp. In general the infl. is a dich. cyme with tendency to cincinnus by preference of the β -bracteole. In *U. pilulifera* L. (Roman nettle) the σ and ρ infls. spring side by side from each node, the σ catkin-like, the ρ a pseudo-head. In *U. urens*

l. (small nettle) a panicle is formed containing both ♂ and ♀ fls. In *U. dioica* L. (large or common nettle) there is a panicle, but each sex is confined to its own plant. P 4; A 4, opp. to P leaves. The sta. are bent down inwards in the bud, and when ripe spring violently upwards and bend out of the fl., the anther turning inside out, so that the loose powdery pollen is ejected as a little cloud, and may be borne by wind to the stigma. The ♀ fl. has a 1-loc., 1-ovuled ovary with a large brush-like stigma. Achene enclosed in the persistent P. Young tops eaten like spinach. Useful fibre from stems.

Urticaceae (*EP.*; *BH.* incl. *Moraceae*, *Ulmaceae*, *Cynocrambaceae*). Dicots. (Archichl. Urticales). 41 gen., 480 sp., trop. and temp. Most are herbs or undershrubs, with no latex, and with alt. or opp. stip. l. Infl. cymose often 'condensed' into pseudo-heads, &c. Fls. usu. unisexual and reg. P 4—5, free or united, sepaloid; sta. as many, bent down inwards in bud and exploding when ripe; $\overline{G}$ 1-loc. with 1 erect basal orthotr. ov. and 1 style. Achene. Seed usu. with rich oily endosp.; embryo straight. *Boehmeria*, *Urtica*, *Maoutia* and others are used as sources of fibre.

Classification and chief genera (after Engler):

A. With stinging hairs. P (4—5) in ♀. L. alt. or opp.

1. *Ureieae*: *Urtica*, *Urera*, *Laportea*.

B. No stinging hairs.

2. *Procridaeae* (P of ♀ 3-merous, stigma paint-brush-like): *Pilea*, *Pellionia*, *Elatostema*.

3. *Boehmerieae* (♂ usu. with 4—5 sta. No invol.): *Boehmeria*, *Maoutia*.

4. *Parietarieae* (P present; bracts often united in invol.): *Parietaria*.

5. *Forskohleeae* (♂ fl. reduced to 1 sta.).

Ulmaceae are distinguished by infl., aestivation of sta., and ovule, and *Moraceae* by presence of latex, and also usu. by ovule, embryo, &c.

Urticales. The 12th order of Archichlamydeae.

Urticastrum Fabricius = *Laportea* Gaudich. (*Urtic.*).

Urticiflorae (Warming). The 4th order of Choripetalae.

Urucury nut, *Maximiliana*.

Urvillea H. B. et K. Sapind. (1). 10 warm Am. Lianes like *Serjania*.

Usteria Willd. Loganiaceae. 1 trop. W. Afr.

Ustilago antherarum, *Lychnis*.

Utleria Bedd. Asclepiadaceae (1). 1 S. India.

Utricle, *Cyperaceae*.

Utricularia L. Lentibulariaceae. 210 trop. and temp., the latter all aquatic. Some Brazilian sp. are confined to the pitchers of the Bromeliaceae. 3 in Brit.; *U. vulgaris* L., the bladder-wort, common. The morphology is interesting, for the usual distinctions drawn between root, stem and l. cannot be applied here. The common bladder-wort is a submerged water pl. with finely-divided l.; it never has roots, even in the embryo. The fls. project above water on short shoots, and there are also short shoots with small l., which arise from the main axis and grow upwards to the surface. Upon the ordinary submerged l. are borne the bladders, curious hollow structures with

trap-door entrances. Small Crustacea and other animals push their way into the bladders and are not able to escape, for the doors only open from outside. The plant takes up the products of the decay of the organisms thus captured; it is very doubtful whether any special ferment is secreted. Other sp. are land pl. with peculiar runners, which develop in the moss or other substratum, on which they grow, and there bear the bladders. Others again, e.g. *U. montana* Poir., are epiph. with water storage in tuberous branches. The l. of all these forms are simple. Goebel (*Pflanzenbiol. Sch.*) has investigated the development of *U.* and finds that all these parts—l., bladders, runners, water-shoots, erect shoots, &c.—are practically equivalent to one another, and that the same rudiment at the growing point may give rise to any one of them, or that they may themselves change from one to another type. Similarly on germ. a lot of spirally-arranged primary l. are produced, and then one or two water-shoots appear lat. on the growing point, bearing no direct relation to the l. in position, but apparently homologous with them. “Like *Genlisea*, *U.* possessed originally a leaf-rosette, ending with an infl., and consisting partly of bladders. Then were added the swimming water-shoots or (in land forms) runners, which though externally unlike leaves (since they develop indefinitely and produce leaves and infls.) yet are originally homologous with them.” For further details see Goebel, *loc. cit.* Hibernation in Brit. sp., &c. by winter buds full of reserves, which drop off and sink.

Uvaria L. Anonaceae (I). 100 trop. Mostly lianes with recurved hooks (infl.-axes). The connective of the anther is usu. leafy.

Uvariastrum Engl. Anonaceae (I). 2 W. trop. Afr.

Uvariopsis Engl. ex Engl. et Diels. Anonaceae (I). 1 Cameroons.

Uvarius (Lat.), like a bunch of grapes.

Uva-Ursi Tourn. ex Moench = *Arctostaphylos* Adans. p.p. (Eric.).

Uvifera L., O. Ktze. = *Coccoloba* L. (Polygon.).

Uvularia L. Liliaceae (I). 4 E. N. Am. Cult. orn. fl.

Vaccaria Medic. (*Saponaria* p.p. *BH.*). Caryophyll. (II. 2). 3 Eur., W. As.

Vacciniaceae (*BH.*) = Ericaceae (§ III. *Vaccinioideae*).

Vacciniopsis Rusby. Ericaceae (III. 2). 1 Bolivia.

Vaccinium L. (incl. *Oxycoccus* Tourn.). Ericaceae (III. 1). 120 *, Andes, Madag. 4 in Brit. *V. Myrtillus* L. the whortle-, bil- or blaeberry, common in hilly districts. *V. uliginosum* L. at high levels. Both have deciduous l. and blue berries. *V. Vitis-Idaea* L., the cow- or whimberrry (often called cranberry by error), also a mountain sp., evergr. *V. Oxycoccus* L., the cranberry, in mountain bogs, a trailing evergr. with l. edges rolled back. The fls. resemble *Erica*, both in structure and mech., but cv. inf.; largely visited by bumble-bees. The fleshy fr. is ed. (used for jams, &c.) and is much distr. by birds. That of the N. Am. sp. *V. pennsylvanicum* Lam. is called blue huckleberry.

Vagaria Herb. Amaryllidaceae (I). 1 Syria.

Vaginate, sheathed.

Vagnera Adans. (*Smilacina* p.p.). Liliaceae (VII). 10 N. Am.

Vahadenia Stapf (*Landolphia* p.p.). Apocynaceae (I. 1). 1 Congo.

- Vahea** Lam. (*Landolphia* p.p.). Apocynaceae (I. 1). 2 trop. Afr., Madag.
- Vahlia** Thunb. Saxifragaceae (I). 4 warm Afr., As. Fls. in pairs (cymes); $\bar{G}$.
- Vahy**, *Landolphia madagascariensis* Benth. et Hook. f.
- Vailia** Rusby. Asclepiadaceae (II. 1). 1 Bolivia.
- Vaillantia** Tourn. ex L. Rubiaceae (II. 11). 2 Medit.
- Valcarcelia** Lag. Leguminosae. Nomen.
- Valdivia** Remy. Saxifragaceae (V). 1 Chili.
- Valentiana** Rafin. Inc. sed. 1 Abyssinia.
- Valentina** Speg. Boraginaceae (III). 1 Patagonia.
- Valentiniella** Speg. (*Valentina* p.p.). Boraginaceae. 1 Patagonia.
- Valenzuelia** Bert. Sapindaceae (I). 2 Chili, Argentina.
- Valerian**, *Valeriana*; **red spur** -, *Centranthus*.
- Valeriana** Tourn. ex L. Valerianaceae. 180 Eur., As., Afr., Am. *V. officinalis* L. and *V. dioica* L. in Brit. (valerian). Fls. protandr. The K forms a pappus upon the fr.
- Valerianaceae** (EP., BH.). Dicots. (Sympet. Rubiales; Asterales BH.). 8 gen., 350 sp., Eur., As., Afr., Am. Herbs with exstip. l. and dich. branching. Fls. in cymose panicles, &c., $\bar{G}$ or unisexual, asymmetric, usu. 5-merous. K sup., little developed at time of flowering, afterwards often forming a pappus as in Compositae; C usu. (5), often spurred at base; A 1—4, epipet., alt. with petals; anthers intr.; $\bar{G}$ (3); only 1 loc. is fertile, and contains 1 pend. anatr. ov. Achene. Seed exalbum. *Chief genera*: Valerianella, Valeriana, Centranthus.
- Valerianella** Tourn. ex Hall. (BH. incl. *Plectritis* DC.). Valerianaceae. 50 N. temp.; 4 Brit. (corn-salad or lamb's lettuce). Seed-dispersal mech. various. In *V. Auricula* DC. the sterile loc. of the fr., in *V. vesicaria* Moench the K, is inflated, in *V. discoidea* Loisel. it forms a parachute, whilst in others it is provided with hooks.
- Valerianopsis** C. A. Muell. (*Valeriana* p.p. EP.). Valer. 7 Brazil.
- Valetonia** Durand ex Engl. Icacinaceae. 1 Brazil.
- Validallium** Small (*Allium* p.p.). Liliaceae (IV). 1 N. Am.
- Vallis** Burm. f. Apocynaceae (II. 2). 6 Indomal.
- Vallea** Mutis ex L. f. Elaeocarpaceae. 3 Colombia, Peru.
- Vallecula** (Lat.), grooves in fruit.
- Vallesia** Ruiz et Pav. Apocynaceae (I. 3). 2 Florida to Argentina.
- Vallisneria** Mich. ex L. Hydrocharitaceae. 3 trop. and subtrop. *V. spiralis* L. (Eur.) a dioec. submerged water-pl. with ribbon l. $\bar{G}$ fls. in dense spikes enclosed in spathes; when ready to open the fls. break off and float up to the surface, where they open. $\bar{G}$ fl. sol. on very long stalk, which brings it to the surface; it has green P, inf. ov. and 3 large stigmas. Pollination occurs on the surface (*cf.* Elodea); and after it the stalk curls up into a close spiral, dragging the young fr. to the bottom to ripen. Veg. repr. by runners, rooting at the ends.
- Vallota** Herb. Amaryllidaceae (I). 1 Cape Colony. Cult. orn. fl.
- Valonia**, *Quercus Aggilops* L.
- Valvate** (aestivation), l. touching, not overlapping.
- Valves**, the portions into which a fruit splits.
- Valvular dehiscence** (anther), *Berberis*, *Lauraceae*.
- Vanclevea** Greene (*Grindelia* p.p.). Compositae (3). 1 Utah.

- Vancouveria** C. Morr. et Dcne. (*Epimedium* p.p. *EP.*). Berberidaceae.
2 N.W. Am.
- Vanda** Jones. Orchidaceae (II. 20). 25 Indomal. Epiph. with fleshy l., sometimes cylindrical. Cult. orn. fl.
- Vandellia** L. (*Lindernia* All.). Scrophul. (II. 6). 30 trop., subtrop.
- Vandopsis** Pfitz. (*Vanda* p.p.). Orchidaceae (II. 20). 3 E. Indomal.
- Vangueria** Juss. Rubiaceae (II. 1). 40 trop. Afr., As., Madag.
- Vanhouttea** Lem. (*Houttea* Decne.). Gesneriaceae (II). 4 Brazil.
- Vanilla** Plum. ex L. Orchidaceae (II. 2). 30 trop. Climbers with fleshy l. and thin velamen (see fam.). *V. planifolia* Andr. (Mex.) is cult.; its pods form the spice vanilla.
- Vanilla**, *Vanilla planifolia* Andr.; - **grass** (Am.), *Hierochloe*.
- Vanillosma** Spach = *Piptocarpha* R. Br. p.p. (Comp.).
- Vanillosmopsis** Sch.-Bip. Compositae (I). 7 Brazil.
- Vaniotia** Lévillé. Scrophulariaceae (III. 1). 1 China.
- Vanoverberghia** Merrill. Zingiberaceae (I). 1 Luzon.
- Vantanea** Aubl. Humiriaceae. 5 Brazil, Guiana.
- Varangevillea** Baill. Verbenaceae (5). 1 Madag.
- Vargasia** Ernst (*Caracasia* Szysz.). Marcgraviaceae. 2 Venezuela.
- Variation** expresses the fact that no two beings are exactly alike, and that there may exist constant slight differences between two forms, expressed in the idea of *varieties*, e.g. a pink and a white variety of the same rose. Cf. Nomenclature.
- Varilla** A. Gray. Compositae (5). 2 Texas, Mexico.
- Varnish**, a solution of resin in oil of turpentine, alcohol, or other solvent; cf. resins; **Chinese - tree**, *Aleurites Fordii* Hemsl.
- Varronia** P. Br. (*Cordia* p.p.). Boraginaceae (I). 4 W.I.
- Varthemia** DC. (*Iphiona* BH.). Compositae (4). 4 Egypt to N.W. India.
- Vasconcellea** A. St Hil. = *Carica* L. p.p. (Caric.).
- Vasconcellosia** Caruel (*Carica* p.p. *EP.*). Caricaceae. 1 Brazil.
- Vaselia** Van Tiegh. (*Elvasia* p.p.). Ochnaceae. 1 Brazil.
- Vaseyanthus** Cogn. Cucurbitaceae (4). 2 Calif.
- Vasivaea** Baill. Tiliaceae. 1 Amazon valley.
- Vassobia** Rusby. Solanaceae (2). 1 Bolivia.
- Vateria** L. Dipterocarpaceae. 3 Seychelles, S. India. *V. indica* L. yields a gum-resin (Indian copal, white dammar).
- Vatica** L. Dipterocarpaceae. 45 Indomal. Several yield resins and useful timbers.
- Vaupelia** Brand (*Trichodesma* p.p.). Boragin. (IV. 1). 6 trop. Afr.
- Vauquelinia** Correa ex Humb. et Bonpl. Rosaceae (I. 2). 4 Mex., Ariz.
- Vausagesia** Baill. Ochnaceae. 2 W. trop. Afr.
- Vavaea** Benth. Meliaceae (III). 5 Polynesia.
- Vazea** Fr. Allem. ex Mart. Olacaceae (nomen). 1 Brazil.
- Veatchia** A. Gray. Anacardiaceae (3). 1 California.
- Vegaea** Urb. Myrsinaceae (II). 1 S. Domingo.
- Vegetable** (for eating), cf. Edible Products; - **horsehair**, *Tillandsia*; - **ivory**, *Palmae*, *Phytelephas*; - **marrow**, *Cucurbita Pepo* L., var.; - **oyster**, *Tragopogon porrifolius* L.; - **sheep**, *Raoulia*.
- Vegetation**, see Forms of -, Zones of -.

Vegetative reproduction, by the detachment of portions of the veg. system, which may grow into new plants; a branch may be detached without modification (water pl., rhizomes, &c.), or may be specialised, with supplies of reserves; special cases are bulbs, bulbils, corms, tubers, buds, &c.; *Agave* (bulbils), *Agropyron* (rhizomes), *Ajuga* (runners), *Allium*, *Asplenium*, *Begonia* (adv. buds, tubers), *Bellis* (rhizomes), *Bertolonia*, *Bryophyllum* (adv. buds), *Cactaceae* (mammillae), *Cardamine*, *Carex* (off-shoots), *Chlorophytum* (special shoots), *Crassula* (pl. in place of fl.), *Crassulaceae*, *Cystopteris*, *Epilobium*, *Fadyenia*, *Fragaria* (runners), *Gagea*, *Gesneriaceae* (suckers), *Globba*, *Hymenophyllaceae* (gemmae), *Lilium*, *Limnobia*, *Limosella* (runners), *Lycopodium* (bulbils), *Mammillaria* (mammillae), *Mercurialis* (rhizomes), *Nasturtium*, *Nephrolepis*, *Ophioglossum* (adv. buds), *Opuntia* (branches), *Oxalis*, *Polygonum*, *Potentilla*, *Prionium*, *Psilotum* (gemmae), *Ranunculus*, *Remusatia* (hooked bulbils), *Rosaceae*, *Rubus*, *Saccharum*, *Salicaceae* (suckers), *Sempervivum* (offsets), *Senecio* (stem joints), *Sinningia*, *Tussilago*, *Vallisneria*, *Zingiber*.

Veins (of l.), the stiff vascular bundles running throughout.

Veitchia H. Wendl. *Palmae* (IV. 1). 4 Fiji, New Hebrides.

Velaea DC. (*Arracacia* BH.). *Umbelliferae* (III. 4). 20 N. Am.

Velamen, *Araceae*, *Orchidaceae*.

Velezia L. *Caryophyllaceae* (II. 2). 4 Medit. to Afghanistan.

Vella L. *Cruciferae* (2). 3 W. Medit. Thorns = stems.

Velleia Sm. *Goodeniaceae*. 12 Austr. Ovary ± sup.

Vellozia Vand. *Velloziaceae*. 40 Brazil, esp. campos.

Velloziaceae (EP.; *Amaryllidaceae* p.p. BH.). Monocotyledons (*Liliiflorae*). 2 gen., 70 sp., Brazil, Afr., Madag. Xero., chiefly of rocky places or dry campos. Perenn. with dichot. branched stems and l. in rosettes (*cf.* *Aloe*). Upper parts of stems clothed with fibrous sheaths of old l., lower parts with adv. roots. The stem is thin, but its coating of roots may be inches deep. Water poured over the roots disappears as if into a sponge, and the pl. is thus able to supply itself from dew, &c. during the dry season. The l. also are xero. Fls. sol., term., reg. P 3+3, corolline; A 3+3, or ∞, in bundles. G 3-loc., with placenta in the form of lamellae, ± peltately widened or thickened at the outer side. Ovules ∞. Caps. Endosp. *Genera*: *Vellozia*, *Barbacenia*. Chief differences from *Amaryllid.* in A and plac.

Velloziella Baill. (*Digitalis* p.p.). *Scrophul.* (III. 1). 1 Brazil.

Velophylla Benj. Clarke. *Podostemaceae*. 1 Brazil.

Veltheimia Gleditsch. *Liliaceae* (V). 3 S. Afr. Cult. orn. fl.

Velutinus (Lat.), velvety.

Velvet bean, *Mucuna*; - bur (W.I.), *Priva*; - grass (Am.), *Holcus lanatus* L.; - leaf (W.I.), *Cissampelos* *Parreira* L.; - seed (W.I.), *Guettarda*; - tamarind, *Dialium*.

Velvitsia Hiern. *Scrophulariaceae* (III. 2). 1 Angola.

Venation, arrangement of the veins in a l.

Venegasia DC. *Compositae* (6). 1 California.

Venenatus (Lat.), poisonous.

Venice turpentine, *Larix europea* DC.

Venidium Less. (*Arctotis* p.p. EP.). *Compositae* (10). 18 S. Afr.

Venose, with veins.

Ventenata Koel. Gramineae (9). 3 Eur., As. Minor.

Ventilago Gaertn. Rhamnaceae. 10 palaeotrop. Some climb by hooks.
Fr. with wing on upper end, formed from style after fert.

Ventral (surface), upper, towards axis, but not consistently used.

Ventricose (C), with basal part swollen out all round.

Venulose, thickly veined.

Venus' comb, *Scandix*; - **flytrap**, *Dionaea*; - **looking glass**, *Specularia*.

Veprecella Naud. Melastomaceae (1). 20 Madag.

Vepris Comm. ex A. Juss. (*Toddalia* BH.). Rutaceae (IV). 6 palaeotrop.

Veratrilla Franch. Gentianaceae (1). 1 China.

Veratrin, *Schoenocaulon*, *Veratrum*.

Veratrum (Tourn.) L. Liliaceae (1). 10 N. temp. Rhiz. with leafy stem and racemes, lower fls. ♀, but upper usu. ♂ by abortion (*andromonoecism*). Sometimes pl. occur with ♂ fls. only. Protandr. Seeds with membranous border. Veratrin is obtained from the rhiz.; that of *V. album* L. is known as white hellebore root.

Verbascum Tourn. ex L. Scrophulariaceae (I. 1). 180 N. temp. 1*; 6 Brit. (mullein). Large perenn. herbs with stout tap-roots, wrinkled like *Taraxacum*. Infl. primarily racemose, but lat. fls. often replaced by condensed dichasia (*cf.* Labiatae). For structure and diagram see fam. Fls. visited for pollen by bees and drone-flies. Those of several formerly officinal (flores Verbasci).

Verbena Linn. Verbenaceae (1). 100 trop. and temp. *V. officinalis* L., the vervain (Brit.), was formerly in great repute as a remedy in eye-diseases, its bright-eyed C, like that of *Euphrasia*, being supposed, under the old doctrine of signatures, to indicate its virtues in that direction. Several cult. orn. perf. fl.

Verbena oil, *Lippia*, *Cymbopogon*.

Verbenaceae (EP.; BH. incl. *Phrymaceae*). Dicots. (Sympet. Tubiflorae; Lamiales BH.). About 70 gen., 750 sp., almost all trop. and subtrop. Herbs, shrubs or trees; many lianes, *e.g.* sp. of *Lantana*, *Clerodendron*, *Vitex*; xero. also, often armed with thorns, frequent. L. usu. opp., rarely whorled or alt., entire or divided, exstip. Infl. racemose or cymose, in the former case most often a spike or head, often with an invol. of coloured bracts. The cymes usu. dich. with a cincinnus tendency (*cf.* Caryophyllaceae); sometimes they also form heads.

Fl. usu. ♀, ♂, usu. 5-merous. K (5) [or (4—8)], hypog.; C (5), usu. with narrow tube, rarely campanulate, often 2-lipped; A 4, didynamous, rarely 5 or 2, or of equal length, alt. with C-lobes, with intr. anthers; G usu. (2), rarely (4) or (5), usu. 4-lobed, originally 2- (or more) loc., but very early divided into 4 (or more) loc. by the formation of a 'false' septum in each loc. (*cf.* Labiatae); plac. axile, with 2 ov. per cpl. (*i.e.* 1 in each loc. after septation); ovules anat. ortho-tr., basal, lat. or pend., but always with the micropyle directed downwards. Style term., rarely ± sunk between lobes of ovary (contrast Labiatae); stigma usu. lobed. Fr. generally a drupe, more rarely a caps. or schizocarp. Seed usu. exalbum.

Several are useful as sources of timber, *e.g.* *Tectona*. See also *Lippia*, *Priva*, *Clerodendron*, &c., for other economic uses.

Classification and chief genera (after Briquet):

- A. Infl. spicate or racemose. Ovule usu. basal, erect, anatr.
 - 1. *Verbeneae* (no endosperm): *Verbena*, *Lantana*, *Lippia*, *Priva*, *Petraea*, *Citharexylum*.
 - 2. *Stilbeae* (endosperm): *Stilbe*.
- B. Infl. of cymose type. Cymes often united into panicles, corymbs, &c.; if axillary, often reduced to 1 fl.
 - a. Ovule lat. (sometimes very high up) semi-anatr. Ovary fully or imperfectly 4—10-loc.
 - 3. *Chloantheae* (fr. usu. drupaceous, never caps.; endosperm): *Chloanthes*.
 - 4. *Viticeae* (as 3, but no endosperm): *Callicarpa*, *Tectona*, *Vitex*, *Clerodendron*.
 - 5. *Caryopterideae* (fr. caps.-like, 4-valved; the valves fall taking the stones with them or loosen them from the placental axis): *Caryopteris*.
 - b. Ovule apical, pend., orthotr.
 - 6. *Symphoremeeae* (ov. 2-loc. to centre; fr. dry, 1-seeded): *Symphorema*.
 - 7. *Avicennieae* (ov. imperfectly 4-loc.; fr. caps., 2-valved, 1-seeded; mangroves): *Avicennia* (only gen.).

✓ **Verbesina** L. Compositae (5). 80 warm Am. ✓

Verdickia De Wild. Liliaceae (III). 1 Congo.

Vereia Andr. = *Kalanchoe* Adans. (Crass.).

Verhuellia Miq. Piperaceae. 2 W.I.

Verinea Merino. Gramineae (8). 1 Spain.

Verlotia Fourn. (*Marsdenia* EP.). Asclepiadaceae (II. 3). 5 Brazil.

Vermiform, worm-shaped.

Vernal grass, sweet, *Anthoxanthum odoratum* L.

Vernalis (Lat.), of Spring.

Vernation (arrangement of l. in bud), cf. Leaf.

Vernonia Schreb. Compositae (I). 600 Am., Afr., As., very common in grassy places. Style typical of § 1 (cf. classification of C.).

Veronica (Tourn.) L. Scrophulariaceae (III. 1). 250 extra-trop., many alpine; 17 in Brit. (speedwell). The Brit. sp. are herbaceous (often woody below); fls. in term. or lat. racemes. The post. sepal of the 5 typical of this fam. is absent, and the two post. petals are united into one large one, so that the P is 4-merous (see fam. for diagram). The 2 sta. and style project horiz. from the rotate C. A small percentage of fls. exhibit a different number of parts (e.g. 5 petals). The fert. of the fl. in *V. Chamaedrys* L., the commonest Brit. sp., is performed chiefly by drone-flies. The style projects over the lower petal, while the two sta. project lat. Honey is secreted at the base of the ovary and concealed by the hairs at the mouth of the short tube. Insects alighting on the lower petal touch the style and grasp the bases of the sta., thus causing the anthers to move inwards and dust them with pollen. The peduncles stand close up against the main stem of the raceme whilst the fls. are in bud, diverge as the fls. open, and again close up as they wither. Caps. with a few flattened seeds suited to wind-distr. In *V. arvensis* L. and other sp. that live in damp places, the capsule merely cracks as it dries and only opens so far as

to allow the seeds to escape when thoroughly wetted; the seeds then become slimy (*cf.* *Linum*).

Many exotic sp. are shrubby, with handsome spikes of fls.; often cult. In N.Z. the genus is char. alpine; 81 sp. occur, of which 77 are endemic. Some are small trees; most are shrubby. Many, *e.g.* *V. cupressoides* Hook. f., are xero. with reduced l. appressed to stem, so that the twigs resemble those of *Cupressus* and other *Coniferae*.

Veronicastrum Heist. ex Fabr. = *Veronica* Tourn. (Scroph.).

Verreauxia Benth. Goodeniaceae. 3 S.W. Austr.

Verrucose, warty.

Verrucularia A. Juss. Malpighiaceae (II). 1 Bahia.

Versatile (anther), balanced on filament, forming a T.

Verschaffeltia H. Wendl. Palmae (IV. 1). 1 Seychelles.

Versicolor (Lat.), changing colour.

Versteegia Valetton. Rubiaceae (II. 4). 1 New Guinea.

Verticil, a whorl; **-aster**, false-, *Labiatae*; **-late**, in whorls.

Verticillatae. The 1st order of Dicots. Archichl.

Verticordia DC. Myrtaceae (II. 2). 40 Austr., esp. W.

Vervain, *Verbena officinalis* L.

Vesicaria Tourn. ex Adans. Cruciferae (4). 2 Eur.

Vesicular, as if of small bladders.

Vesselowskyia Pampanini (*Geissois* p.p.). Cunoniaceae. 1 Austr.

Vestia Willd. Solanaceae (4). 1 Chili.

Vestigial organs, functionless rudiments.

Vetch, *Vicia*; **kidney-**, *Anthyllis*; **milk-**, *Astragalus*.

Vetiver, khus-khus, *Vetiveria zizanioides* Stapf.

Vetiveria Thou. (*Andropogon* p.p.). Gramineae (2). 2 Indomal., incl.

V. zizanioides Stapf, the khus-khus (*A. squarrosus* L. f., *A. muricata* Retz), whose roots are woven into fragrant mats, baskets, fans, &c., which give off scent when sprinkled with water.

Vexillaria Hoffmgg. = *Centrosema* DC. (Legum.).

Vexillum, *Leguminosae*.

Viable, capable of germination.

Viborgia Thunb. (*Cytisus* p.p.). Leguminosae (III. 3). 7 S. Afr.

Viburnum L. Caprifoliaceae. 110 temp. and subtrop., esp. As., N. Am.

Winter buds of some naked, *i.e.* with no scale-l. The outer fls. of the cymose corymb are neuter in some, *e.g.* *V. opulus* L. (guelder-rose), having a large C, but at cost of essential organs. In the cult. guelder-rose all the fls. are neuter.

Vicarya Stocks. Inc. sed. Nomen.

Vicatia DC. Umbelliferae (III. 4). 3 Himalaya.

Vicia Tourn. ex L. Leguminosae (III. 9). 150 N. temp., and S. Am.; 10 in Brit. (vetch, tare). Most are climbers with leaf-tendrils. Fl. mech. typical of many L. Pollen early shed by anthers into apex of keel; upon style, below stigma, is a brush of hairs which carries out the pollen when keel is depressed (see fam.). *V. sativa* L. and many other vetches are valuable fodder pl.; *V. Faba* L. is the broad bean, with its many vars.

Vicoa Cass. (*Inula* p.p. EP.). Compositae (4). 6 trop. As., Afr.

Victoria Lindl. Nymphaeaceae (III). 3 trop. Am. *V. regia* Lindl. is the giant water-lily of the Amazon; it has the habit of *Nymphaea*,

but is of enormous size. The floating l. may be 2 m. across; the edge is turned up to a height of several cm., and on the lower side the ribs project and are armed with spines. Fl. like *Nymphaea* but fully epig. Fr. also similar; the seeds contain both endo- and peri-sperm. They are roasted and eaten in Brazil. The plant is now cult.; it was discovered in 1801, but not brought into general notice till 1837.

Vieraea Sch.-Bip. Compositae (4). 1 Canaries.

Vieusseuxia D. Delaroche = *Moraea* Mill. p.p. (Irid.).

Vigna Savi. Leguminosae (III. 10). 50 trop. *V. sinensis* Endl. is the cherry-bean or cow-pea (trop. As.); pods eaten like French beans. *V. Catjang* Endl. (blackeye pea) is also cult.

Vignea Beauv. = *Carex* Dill. (Cyper.).

Vigneopsis De Wild. Leguminosae (III. 10). 1 Congo.

Vignidula Börner = *Carex* Dill. p.p. (Cyper.).

Viguiera H. B. et K. Compositae (5). 80 warm Am., W.I.

Vilfa Beauv. = *Sporobolus* R. Br. (Gram.).

Villadia Rose (*Cotyledon*, &c. p.p.). Crassulaceae. 12 Mexico.

Villamilla Ruiz et Pav. (*Rivina* p.p. EP.). Phytolacc. 4 trop. Am.

Villanova Lag. Compositae (6). 8 Arizona to Chili.

Villaresia Ruiz et Pav. Icacinaceae. 10 Brazil, Chili. *V. Congonha* (DC.) Miers is used like maté (*Ilex*).

Villaria Rolfe. Rubiaceae (I. 8). 1 Phil. Is.

Villarsia Vent. Gentianaceae (II). 1 Cape Col., 2 Austr. The water plant often known under this name is a *Limnanthemum*.

Villebrunia Gaudich. Urticaceae (3). 8 Ceylon to Japan. *V. integrifolia* Gaudich. yields a good fibre.

Villose, villous, with long weak hairs.

Villouratea Van Tiegh. Ochnaceae. 1 Brazil.

Vilmorinia DC. Leguminosae (III. 6). 1 S. Domingo.

Vilshenica Thou. Inc. sed. Nomen.

Vimen P. Br. Inc. sed. Nomen.

Viminaria Sm. Leguminosae (III. 2). 1 Austr.

Vimineous, with long flexible twigs.

Vinca L. (BH. incl. *Lochnera* Rchb.). Apocynaceae (I. 3). 5 Eur., W. As. *V. minor* L. and *V. major* L., the periwinkles, nat. in England. The anthers stand above the stigmatic disc, but the stigma itself is on the under surface, so that self-fert. is not caused as the insect's tongue enters the fl.

Vincetoxicopsis Costantin. Asclepiadaceae (II. 3). 1 Indochina.

Vincetoxicum Rupp. (*Cynanchum* p.p. EP.). Asclepiadaceae (II. 1). 40 warm.

Vine, *Vitis*; (in U.S.) any climbing or running stem.

Vinegar, *Borassus*, *Cocos*, *Vitis*, &c.

Viola Tourn. ex Linn. Violaceae. 250 cosmop., chiefly N. temp. Several in Brit. *V. odorata* L. and *V. canina* L. are the sweet and dog violets, *V. tricolor* L. the pansy or heart's-ease, and others are also well known. Many sp. and vars. cult. Herbs with large stips., on which glands sometimes occur. Fls. usu. one in each axil; sometimes (e.g. *V. tricolor*) a veg. shoot arises above the fl. in the same axil. The intr. anthers form a close ring round the ovary, below the style, which ends in a variously shaped head on whose ant. surface is

the stigma, often a hollow pocket. The lower pet. forms a landing-place and is often prolonged backwards into a spur, in which collects honey, secreted by processes projecting into it from the lower sta. Honey guides show as streaks upon the C leading to nectaries. These fls. are as a rule incapable of self-fert. In *V. tricolor* the pollen is shed on to the ant. pet., and the lower edge of the stigma is guarded by a flap which the insect, when withdrawing, closes; and thus the fl.'s own pollen does not reach the stigma. The small-flowered subspecies *V. arvensis* Murr. has not this flap and fertilises itself. In *V. odorata* the stigma is merely the bent-over end of the style, and is first touched as the insect enters. The size, colour, &c. of the flower of this sp. and of *V. canina* render them suited to bees.

In many, e.g. *V. canina*, *V. odorata*, *V. sylvestris*, Lam., the fls. are rarely visited, and little seed is set. They usu. flower early in the season; later on appears a second form of fl. on the same pl. These are the *cleistogamic* fls., which never open, but set seed by self-fert. In *V. canina* this fl. looks like a bud; the seps. remain shut, there are 5 minute pets., 2 ant. sta. with anthers containing a little pollen (only enough for fert.—there is no waste as in open fls.) and 3 other abortive sta.; pistil much as usual. The anthers are closely appressed to the stigma; the pollen-grains germinate within them, and the tubes burrow through the anther-walls into the stigma. *V. odorata* has similar fls., but with all 5 sta. fertile. The production of these fls. ensures the setting of seed.

Fr. a 3-valved capsule; seeds very hard and slippery. One plac. with its seeds remains attached to each valve; as this dries it bends upwards into a U-shape, squeezing the seeds against one another and shooting them out (cf. *Claytonia*, *Buxus*).

Violaceae (EP., BH. incl. *Sauvagesieae* of Ochnaceae). Dicots. (Archichl. Parietales). 15 gen., 300 sp., cosmop. Annual or perennial herbs, or shrubs. L. alt., stip., usu. undivided. Fls. 1 or 2 in each axil, in usu. racemose infls., bracteolate, ♂, usu. ♂. K 5, persistent; C 5, hypog., usu. ♂, the ant. petal often spurred to hold the honey, with descending aestivation; A 5, alt. with petals, hypog., forming a ring round the ovary; filament very short, anther intr., connective usu. with membranous prolongation; G (3), 1-loc. with 1—∞ anatr. ov. on each of the parietal plac. Style simple. Fr. a 3-valved loculic. caps. Endosp. *Chief genera*: *Alsodeia*, *Viola*.

Violarieae (BH.), Violaceae and *Sauvagesieae* of Ochnaceae.

Violet, *Viola*; **African -**, *Saintpaulia*; **dame's -**, *Hesperis*; **essence of -**, *Iris florentina* L.; **water -**, *Hottonia*.

Viorna Reichb. (*Clematis* p.p.). Ranunculaceae (3). 15 N. Am.

Viper's bugloss, *Echium vulgare* L.

Virchowia Schenk (*Ilysanthes* p.p. EP.). Scrophular. (II. 6). 1 Cuba.

Virea Adans. = *Leontodon* L. p.p. (Comp.).

Virecta Afzel ex Sm. Rubiaceae (I. 2). 5 trop. Afr.

Virens (Lat.), green.

Virgatus (Lat.), twiggy.

Virgilia Lam. Leguminosae (III. 1). 1 Cape Colony. Useful wood.

Virginian cowslip (Am.), *Mertensia virginica* DC.; **- creeper**, *Parthe-*

nocissus; -snakeroot (Am.), *Aristolochia Serpentaria* L.; -stock, *Malcomia maritima* Ait.

Virgin's bower (Am.), *Clematis*.

Virgularia Ruiz et Pav. = *Gerardia* L. (Scroph.).

Viridescens (Lat.), greenish; **viridis** (Lat.), green.

Virola Aubl. (*Myristica* p.p. *BH.*). Myristicaceae. 27 trop. Am.

Viscago Hall. = *Silene* L. (Caryoph.).

Viscainoa Greene. Zygophyllaceae. 1 Lower California.

Viscaria Riv. ex Rupp. (*Lychnis* p.p. *BH.*). Caryophyllaceae (II. 1).

5 N. temp. *V. viscosa* Aschers. (catchfly) Brit.

Viscid, viscosus (Lat.), sticky.

Viscin, Loranthaceae, Viscum.

Viscum Tourn. ex L. Loranthaceae (II). 20 *. *V. album* L. in Brit. (mistletoe) is a semiparasitic shrubby evergr., growing on apple, hawthorn, oak, &c., and drawing nourishment from its host by suckers. It is repeatedly branched in a dich. manner, the central stalk usu. ending in an infl. Each branch bears two green leathery l., and repres. a year's growth. The unisexual dioec. fls. are in groups of three. No calyculus. Sta. completely fused to the P-leaf. Pollen-sacs very numerous. Ovary as usual. The fls. secrete honey and are visited by flies. Pseudo-berry. The layer of viscin prevents the bird that eats the berry from swallowing the seed, which it scrapes off its bill on to a branch, where it adheres and germinates.

Visenia Houtt. = *Melochia* Dill. p.p. (Sterc.).

Visiania DC. = *Ligustrum* Tourn. (Olea.).

Vismia Vand. Guttiferæ (II). 27 trop. Am.

Visnea L. f. Theaceae. 1 Canaries.

Vitaceae (*EP.*; *Ampelidaceae* *BH.*). Dicots. (Archichl. Rhamnales; Celastrales *BH.*). 11 gen., 450 sp., mostly trop. and subtrop. Climbing or rarely erect shrubs, with alt. stip. l. Infl. cymose, usu. complex; bracteoles present. Fl. reg., ♂ or not. K (4—5), small and cup-like, very slightly lobed; C 4—5, valvate, often united at the tips and falling off as a hood upon the opening of the bud; A 4—5, opp. to the petals, at the base of a hypog. disc, with intr. anthers; G usu. (2), rarely 3—6, multi-loc. with usually 2 collat. anatr. ov., erect with ventral raphe. Berry. Endosp.; embryo straight. *Vitis* is economically important. *Chief genera*: *Vitis*, *Leea*.

Vitaeda Börner = *Ampelopsis* p.p. (*Vit.*).

Vitellaria Gaertn. f. (*Lucuma* *BH.*). Sapotaceae (I). 15 trop. Am. *V. mammosa* Radlkf. (marmalade tree) ed. fr.

Vitex Tourn. ex L. Verbenaceae (4). 75 trop. and temp.

Viticella Dill., Small (*Clematis* p.p. *BH.*). Ranuncul. (3). 1 Eur.

Vitiphoenix Becc. (*Hydriastele* p.p. *EP.*). Palmae (IV. I). 1 Fiji.

Vitis (Tourn.) L. (*BH.* incl. *Ampelopsis* Michx., *Cissus* L., *Quinaria* Rafn.). Vitaceae. 30 *. The vines are climbing pl., with tendrils which repres. modified infls.; the stem is usu. regarded as a sympodium, each axis in turn ending in a tendril, but there has been much argument upon the subject. The tendril may attach itself by the ordinary coiling method, or may be negatively heliotropic and thus force its way into the crevices of the support: in these crevices the tips of the tendrils form large balls of tissue, the outer parts of which

- become mucilaginous and cement the tendril to its support. *V. vinifera* L. (Orient, N.W. India) is the cult. grape, cult. in most warm countries. About 3000 million gallons of wine are made every year. When dried the fruits form raisins; the sultana raisin is a seedless var. The currants of commerce are the fruit of the Corinthian variety (currant is a corruption of Corinth). *V. aestivalis* Michx. (summer-grape) and *V. Labrusca* L. (fox-grape) are N. Am. sp. which have been largely introduced into Eur., as they resist the attacks of the dreaded insect, Phylloxera, better than the Eur. sp. For Virginian creepers cf. *Parthenocissus*.
- Vitis-Idaea** Tourn. ex Moench = *Vaccinium* L. p.p. (Eric.).
- Vittadinia** A. Rich. Compositae (3). 8 New Guinea, Austr., New Caled., N.Z., S. Am. (Australian daisy).
- Vittae**, cf. *Umbelliferae*.
- Vittaria** Sm. Polypodiaceae. 50 trop. and subtrop.
- Vittate**, striped lengthwise.
- Viviania** Cav. Geraniaceae. 15 S. Am.
- Vivipary**, germination in the fr., cf. Mangroves; also applied to many cases of veg. repr. (*q.v.*), esp. by bulbils.
- Voacanga** Thou. Apocynaceae (I. 3). 20 Malaya, Madag., Afr.
- Voandzeia** Thou. Leguminosae (III. 10). 1 trop. Afr., Madag., *V. subterranea* Thou.; it buries its young fr. like *Arachis*. The seed is ed. and the pl. is largely cult. (Bambarra groundnut).
- Vochisia** Juss. (*Vochysia* Poir.). Vochysiaceae. 54 trop. Am.
- Vochysiaceae** (EP., BH. incl. *Trigoniaceae*). Dicots. (Archichl. Geraniales; Polygalineae BH.). 5 gen., 80 sp., trop. Am. Trees and shrubs, rarely herbs, with opp. or whorled simple l., with or without stip. Fls. 2, typically 5-merous, obliquely 4; K united at base, deciduous, one sepal often spurred; C usu. 3—1, perig. or epig.; 1 fertile sta. and stds.; cpls. (3) each with ∞ —2 ov. with 2 integuments. Fr. indeh. or a loculic. caps.; no endosp. Chief genus *Vochisia*.
- Vogelia** Lam. Plumbaginaceae. 3 S. Afr. to India.
- Voharanga** Costantin et Bois. Asclepiadaceae (II. 1). 1 Madag.
- Vohemaria** Buchenau. Asclepiadaceae (II. 1). 1 Madag.
- Volatile oils**, cf. Oils.
- Volkameria** L. = *Clerodendron* L. p.p. (Verben.).
- Volkensia** O. Hoffm. Compositae (1). 1 E. trop. Afr.
- Volkensiella** H. Wolff. Umbelliferae (III. 5). 1 E. C. Afr.
- Volkensiophyton** Lindau. Acanthaceae (IV. A). 1 E. trop. Afr.
- Volkensteinia** Van Tiegh. (*Gomphia* p.p.). Ochnaceae. 2 Brazil.
- Volubilis** (Lat.), twining.
- Volutarella** Cass. (*Centaurea* p.p. EP.). Compositae (II). 5 Medit. to India.
- Vonitra** Becc. (*Dypsis* p.p.). Palmae (IV. 1). 2 Madag.
- Venroemeria** J. J. Smith. Orchidaceae (II. 15). 1 New Guinea.
- Vossia** Wall. et Griff. Gramineae (2). 1 trop. As., Afr. A swimming grass, which with *Saccharum spontaneum* L. makes the great grass bars of the Nile.
- Vossianthus** O. Ktze. = *Sparmannia* L. (Tili.).
- Votomita** Aubl. Inc. sed. 1 Guiana.

- Vouacapoua** Aubl. (*Andira* Lam. *q.v.*). Legum. (III. 8). 25 trop. Am., Afr.
- Vouapa** Aubl. (*Macrolobium* Schreb.). Legum. (II. 3). 20 trop. Am., Afr.
- Voyara** Aubl. Inc. sed. 1 Guiana.
- Vouarana** Aubl. (*Cupania* p.p. *BH.*). Sapindaceae (I). 1 Guiana, Braz.
- Voyria** Aubl. (*BH.* incl. *Leiphaimos* Cham. et Schlecht. *Voyriella* Miq.). Gentianaceae (I). 3 Guiana.
- Voyriella** Miq. Gentianaceae (I). 1 Guiana, N. Brazil.
- Vriesia** Lindl. (*Tillandsia* p.p. *BH.*). Bromeliaceae (I). 60 trop. Am. Cult.
- Vrydagzynea** Blume. Orchidaceae (II. 2). 12 Malaya, Polynesia.
- Vulcanisation of rubber**, its combination with sulphur, &c.
- Vulgaris** (Lat.), common.
- Vulneraria** Tourn. ex Hall. = *Anthyllis* Riv. p.p. (Legum.).
- Vulpia** C. C. Gmel. = *Festuca* Tourn. p.p. (Gram.).
- Vuylstekeara** × Hort. Orchidaceae. Hybrid of *Cochlioda*, *Miltonia* and *Odontoglossum*.
- W** (fl. class), fls. fertilised by wind, cf. Pollination; *Artemisia*, *Betula*-*ceae*, *Calluna*, *Carex*, *Casuarina*, *Coniferae*, *Corylus*, *Cycadaceae*, *Cyperaceae*, *Elaeagnaceae*, *Empetrum*, *Fraxinus*, *Gramineae*, *Humulus*, *Juglandaceae*, *Juncaceae*, *Mercurialis*, *Platanus*, *Potamogeton*, *Quercus*, *Rumex*, *Sparganium*, *Spinacia*, *Thalictrum*, *Triglochin*, *Typhaceae*, *Ulmaceae*, *Urticaceae*, *Zea*.
- Waahoo** (Am.), *Euonymus atropurpureus* Jacq.
- Wachendorfia** Burm. Haemodoraceae. 7 Cape Colony. Transv. zygomorphism in fl. but not obvious on account of twisting of stalk.
- Wagatea** Dalz. Leguminosae (II. 7). 1 S.W. India.
- Wageneria** Klotzsch = *Begonia* Tourn. p.p. (Begon.).
- Wahlenbergia** Schrad. (*BH.* incl. *Hedraeanthus* Griseb.). Campanulaceae (I. 1). 80 chiefly S. temp. *W. hederacea* Rchb. (*Campanula hederacea* L.), the ivy-leaved bell-flower, in Brit. Fl. like *Campanula*. Capsule loculic. (the chief difference between these two gen.).
- Waillesia** Lindl. (*Dipodium* *BH.*). Orchidaceae (II. 17). Malaya.
- Waitzia** Wendl. Compositae (4). 6 S. and W. temp. Austr.
- Wake robin**, *Arum maculatum* L., (Am.) *Trillium*.
- Walafrida** (*Selago* p.p. *BH.*). Scrophular. (II. 7). 35 S. and trop. Afr.
- Waldheimia** Kar. et Kir. (*Allardia* *BH.*). Compositae (7). 8 Himal.
- Waldsteinia** Willd. Rosaceae (III. 2). 4 N. temp.
- Walking-fern**, *Asplenium rhizophyllum* Kunze; - **sticks**, cf. *Bamboos*, *Arundo*, *Rattans*, *Zanthoxylum*, &c.
- Wall flower**, *Cheiranthus Cheiri* L.; - **pepper**, *Sedum*; - **spleenwort** *Asplenium Ruta-muraria* L.
- Wallaba**, *Eperua falcata* Aubl.
- Wallacea** Spruce. Ochnaceae. 1 Amazon valley.
- Wallaceodendron** Koorders. Leguminosae (I. 1). 1 Celebes.
- Wallenia** Sw. Myrsinaceae (II). 15 W.I.
- Walleria** J. Kirk. Amaryllidaceae (III). 4 trop. Afr., Madag.
- Wallichia** Roxb. Palmae (IV. 1). 3 Himal. to Malaya.

- Walnut**, *Juglans regia* L.; country -, *Aleurites*; **East Indian** -, *Albizia Lebbek* Benth.; **Otaheite** - (W.I.), *Aleurites*; **satin** -, *Liquidambar styraciflua* L.
- Walpersia** Harv. et Sond. Leguminosae (III. 3). 1 S. Afr.
- Walsura** Roxb. Meliaceae (III). 15 Indomal.
- Waltheria** L. Bombacaceae (Sterculiaceae *BH.*). 30 trop. Am.
- Waluwewa** Regel (*Oncidium* p.p. *EP.*). Orchidaceae (II. 19). 1 Brazil.
- Wampl**, *Clausena Wampli* Oliv.
- Wangerheimia** Moench. Gramineae (10). 1 Spain, N. Afr.
- Wangerinia** Franz (*Calandrinia* p.p.). Portulacaceae. 1 Chili.
- Wara**, *Calotropis gigantea* Ait.
- Warburgia** Engl. Winteranaceae. 1 E. Afr.
- Wardenia** King. Araliaceae (1). 1 Malay Peninsula.
- Warea** Nutt. Cruciferae (1). 2 Florida.
- Warionia** Benth. et Coss. Compositae (12). 1 N.W. Sahara.
- Warmingia** Reichb. f. Orchidaceae (II. 19). 2 Brazil.
- Warneckea** Gilg. Melastomaceae (III). 1 E. trop. Afr.
- Warpuria** Stapf. Acanthaceae (IV. A). 1 Madag.
- Warrea** Lindl. Orchidaceae (II. 10). 2 Peru, Colombia.
- Warreella** Schlechter. Orchidaceae (II. 14). 2 Guiana, Colombia.
- Warszewiczella** Reichb. f. (*Zygopetalum* p.p. *BH.*). Orchidaceae (II. β . II). 10 Peru, Colombia, C. Am., W.I. Cult. orn. fl.
- Warscewiczia** Klotzsch. Rubiaceae (1. 2). 4 trop. Am., W.I.
- Wart cress** (Am.), *Senebiera*; - **herb** (W.I.), *Rhynchosia*.
- Wasabia** Matsumura (*Eutrema* p.p.). Cruciferae (2). 2 Japan.
- Washingtonia** Rafin. (*Osmorhiza* Rafin.). Umbelliferae (III. 2). 12 N. Am.
- Washingtonia** H. Wendl. (*Pritchardia* p.p. *EP.*). Palmae (1. 2). 2 S. Calif., Arizona.
- Washingtonia** Winsl. = *Sequoia* Endl. (Conif.).
- Wasp flowers**, *Cotoneaster*, *Epipactis*, *Ficus*, *Hedera*, *Scrophularia*, *Symphoricarpus*.
- Water arum** (Am.), *Calla*; - **avens**, *Geum*; - **carriage** of seeds, cf. Dispersal; - **chestnut**, *Trapa*; - **chinquepin** (Am.), *Nelumbium*; - **coconut**, *Nipa*; - **cress**, *Nasturtium officinale* R. Br.; - **crowfoot**, *Ranunculus*; - **daffodil**, *Sternbergia*; - **dropwort**, *Oenanthe*; - **grass**, *Panicum molle* Sw.; - **hemlock**, *Cicuta*; - **hyacinth**, *Eichhornia crassipes* Solms; - **hyssop** (W.I.), *Herpestis*; - **leaf**, *Hydrophyllum*; - **lemon**, *Passiflora laurifolia* L.; - **lettuce**, *Pistia*; - **lily**, *Nymphaea*, *Nuphar*, *Victoria*; - **melon**, *Citrullus vulgaris* Schrad.; - **milfoil**, *Myriophyllum*; - **nymp** (Am.), *Nymphaea*; - **parsnip**, *Sium*; - **pennywort** (Am.), *Hydrocotyle*; - **pepper**, *Elatine*; - **pimpernel** (Am.), *Samolus*; - **plantain**, *Alisma Plantago* L.; - **plants**, see separate article below; - **pores**, *Conocephalus*, *Saxifraga*, *Spathodea*; - **rice**, *Zizania*; - **soldier**, *Stratiotes*; - **starwort**, *Callitriche*; - **storage**, cf. Xerophytes; - **thyme**, *Elodea*; - **vine** (W.I.), *Doliocarpus*, &c.; - **violet**, *Hottonia*; - **weed**, *Elodea*; - **willow** (Am.), *Dianthera*; - **wort** (Am.), *Elatine*.
- Water plants** (*hydrophytes*), a well-marked form of veg., contrasting with meso- and xero-phytes. All in this book are derived from land pl.; many are very old, widely dispersed. They show rapid

growth, frequent branching, much veg. repr. They have no rigid anatomy, and are marked by absence of cuticle, stomata, &c., and by presence of enormous intercellular spaces. The l. shows 4 types, (1) the floating l. of *Hydrocharis*, *Nymphaeaceae*, *Ranunculus*, *Trapa*, &c., a round l. with cuticle and stomata above; (2) the awl-shaped type of submerged l. of *Isoetes*, *Lobelia*, *Subularia*, &c., plants which can often survive upon land; (3) the ribbon type of most Monocots., e.g. *Vallisneria*, *Potamogeton*, *Ruppia*, *Zostera*; (4) the much divided type with linear segments, *Bidens*, *Ceratophyllum*, *Myriophyllum*, *Podostemaceae*, *Ranunculus*, *Trapa*, &c. Heterophylly is common, cf. *Cabomba*, *Callitriche*, *Potamogeton*, *Ranunculus*, *Sagittaria*, *Salvinia*, *Trapa*, &c.

Many hibernate by buds formed at the ends of branches, full of reserves, e.g. *Hydrocharis*, *Myriophyllum*, *Potamogeton* sp., *Utricularia*, by tubers, *Potamogeton*, sp., *Sagittaria*, by rhizomes, *Potamogeton*, sp., *Nymphaeaceae*. Cf. *Lemnaceae*.

Most are perennials; annuals in *Marsilea*, *Naias*, *Subularia*. Fls. usu. wind- or insect-pollinated, but *Ruppia*, *Zostera*, &c. are fert. under water. The seeds usu. sink, and often show interesting features in germination. A few *amphibious* pl. exist, which can also live on land, e.g. *Littorella*, *Polygonum*. In the trop. occur the interesting fams. *Hydrostachyaceae*, *Podostemaceae*, and *Tristichaceae* (q.v.), in swift water.

Cf. also *Aldrovanda*, *Alismaceae*, *Aponogeton*, *Araceae*, *Azolla*, *Butomaceae*, *Eichhornia*, *Elatinaceae*, *Elodea*, *Hippuris*, *Hydrocleys*, *Jussieuia*, *Lemna*, *Limnanthemum*, *Limnobium*, *Nelumbium*, *Nipa*, *Nuphar*, *Nymphaea*, *Peplis*, *Pistia*, *Pontederiaceae*, *Potamogetonaceae*, *Rumex*, *Samolus*, *Sesbania*, *Stratiotes*, *Victoria*, *Zannichellia*, &c., and see Schenk, *Die Wassergewächse*, and Schimper's and Warming's *Plant Geography*.

Watsonamra O. Ktze., Standley (*Pentagonia* Benth.). Rubiaceae (1. 7). 9 Mexico, C. Am.

Watsonia Mill. Iridaceae (III). 12 Afr., Madag. Cult. orn. fl.

Wattle, *Acacia*.

Wax, *Ceroxylon*, *Copernicia*, *Myrica*, *Palmae*, *Rhus*; - **flower**, *Angraecum*, *Hoya*; - **gourd**, *Benincasa*; **Japan** -, *Rhus vernicifera* DC.; - **myrtle**, *Myrica*; - **palm**, *Copernicia cerifera* Mart.; - **tree**, *Rhus*; **waxy leaf**, *Agave*, *Crambe*, *Dischidia*, *Elymus*, &c.

Wayfaring tree, *Viburnum*.

Weather plant, *Abrus precatorius* L.; - **thistle**, *Carlina*.

Webbia DC. = *Vernonia* Schreb. p.p. (Comp.).

Webera Schreb. (*Tarenna* Gaertn.). Rubi. (1. 8). 30 trop. As., Afr.

Weberbaueria Gilg et Muschler (*Braya* p.p.). Crucif. (4). 1 Peru, Arg.

Weberbauerella Ulbrich. Leguminosae (III. 7). 1 Peru.

Weberocereus Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 2 C. Am., W. I.

Websteria S. H. Wright (*Dulichium* Pers.). Cyperaceae (1). 1 Florida.

Weddellina Tul. Tristichaceae. 1 Guiana, N. Brazil, *W. squamulosa* Tul. Roots ± flattened, with haptera, shoots borne at their edges. Two kinds, veg. to 2½ feet long and much branched, and short unbranched flowering ones. Between the branches of the long shoots are branches of limited growth, as in *Tristicha*.

Wedding flower, *Francoa*.

Wedelia Jacq. Compositae (5). 65 trop. and warm temp.

Wedeliella Cockerell (*Allionia* p.p.). Nyctaginaceae. 3 N. Am.

Weeds, cf. *Ageratum*, *Cactaceae*, *Capsella*, *Cynara*, *Eichhornia*, *Elodea*, *Galinsoga*, *Gomphocarpus*, *Lactuca*, *Salsola*, *Tithonia*, *Xanthium*, &c.

Weeping willow, *Salix babylonica* L.

Wehlia F. Muell. Myrtaceae (II. 2). 3 W. Austr.

Weigelia Pers., **Weigela** Thunb. = *Diervilla* Tourn.

Weigeltia A. DC. (*Cybianthus* BH.). Myrsinaceae (II). 21 W.I., trop. S. Am.

Weigeltia Reichb. Leguminosae. Nomen.

Weights, *Abrus precatorius* L., *Ceratonia Siliqua* L.

Weihea Spreng. Rhizophoraceae. 12 Ceylon, Madag., trop. Afr.
Fls. fully hypog. Sometimes placed near to *Elaeocarpus*.

Weinmannia L. Cunoniaceae. 80 ✱ exc. S. Afr.

Weld, *Reseda lutea* L.

Weldenia Schult. Commelinaceae. 1 Mexico.

Welfia H. Wendl. Palmae (IV. 1). 2 C. Am.

Wellingtonia Lindl. = *Sequoia* Endl. (Conif.).

Wellstedia Balf. f. Boraginaceae (v). 1 Socotra.

Welsh poppy, *Meconopsis cambrica* Vig.

Welwitschia Hook. f. (*Tumboa* Welw.). Gnetaceae. 1 sp., *W. mirabilis* Hook. f. (*T. Bainesii* Welw.), a remarkable plant discovered by Baines in Damaraland in W. trop. Afr., and shortly afterwards by Welwitsch in Mossamedes, and described by Hooker in *Trans. Linn. Soc.* 1883 (q.v.). Specimens in most museums. The plant has a peculiar habit, and grows for at least a century, and probably much longer. Its native climate is a markedly desert one, with a mere trifle of rainfall, the bulk of the moisture being derived from sea fogs, which cause a heavy deposit of dew. Seeds are produced in large quantities, and being enclosed in the winged P are blown about, and germinate in the occasional wet years. The stem is stout, with a two-lobed form and almost circular in section. It narrows downwards into a stout tap-root. At the edges of the two lobes are two grooves, from each of which springs a l. These l. are the first pair after the cots. and are the only l. the plant ever has; they go on growing at the base throughout its life, wearing away at the tips and often becoming torn down to the base. The stem continues to grow in thickness, and exhibits concentric grooves upon the top surface. In the outer (younger) of these grooves the fls. appear, in cpd. dichasia of small (♂) or larger (♀) spikes; they are covered by bracts which become bright red after fert. The fls. are dioec., and are produced annually. Pollination by insects. In the ♂, there is a P of 2 + 2 l., the outer whorl transv. to the bract; sta. 6, united below, with 3-loc. anthers; gynaeceum rudimentary, but with the integument of the ovule looking like a style and stigma. In the ♀, the perianth-l. are fused into a tube, and are equivalent to the two outer l. of the ♂; there is no trace of sta. Ovule 1, erect, with the integument drawn out beyond it. Seed with endosp. and perisperm, enclosed in the P which becomes winged. [See *Gymnospermae*, and Pearson in *Phil. Trans.* 198, 1906.]

- Welwitschiella** O. Hoffm. Compositae (6). 1 Angola.
Welwitschiina Engl. (*Trichlisia* p.p.). Menisperm. 1 Angola.
Wendlandia Bartl. Rubiaceae (II. 3). 20 Indomal., China. L. sometimes whorled.
Wendlandiella Dammer. Palmae (IV. 1). 1 Brazil.
Wendtia Meyen. Geraniaceae. 2 Chili.
Wenzelia Merrill. Rutaceae (V). 1 Phil. Is.
Werneria H. B. et K. Compositae (8). 32 Andes, Himal., Abyss.
West Indian arrowroot, *Maranta arundinacea* L.; - **bark**, (W.I.), *Exostemma*; - **birch**, *Bursera gummifera* L.; - **boxwood**, *Casearia praecox* Griseb.; - **cedar**, *Cedrela*; - **ebony**, *Brya Elenus* DC.; - **locust tree**, *Hymenaea*.
Westia Vahl. Leguminosae (inc. sed.). 2 Guinea.
Westringia Sm. Labiatae (II). 12 Austr.
Wetria Baill. (*Alchornea* BH.). Euphorbiaceae (A. II. 2). 2 Mal. Arch.
Wetriaria O. Ktze. (*Pycnocomia* Benth.). Euph. (A. II. 2). 8 Afr., Masc.
Wettinia Poepp. ex Endl. Palmae (IV. 1). 3 trop. Am.
Wettsteinia Petrok. Compositae (II). 1 Turkestan.
Weymouth pine, *Pinus Strobus* L.
Wheat, *Triticum*; **cow -**, *Melampyrum*; - **grass**, *Agropyron*.
Wheelerella G. B. Grant. Boraginaceae (IV. 2). 2 W. N. Am.
Whim berry, *Vaccinium Vitis-Idaea* L.
Whin, *Ulex*; **petty -**, *Genista*.
Whipplea Torr. Saxifragaceae (III). 2 U.S.
White bryony, *Bryonia dioica* Jacq.; - **bent grass**, *Agrostis alba* L.; - **cedar**, *Chamaecyparis*, *Chickrassia*, *Libocedrus*, &c.; - **dammar**, *Vateria*; - **grass** (Am.), *Leersia*; - **head** (W.I.), *Parthenium*; - **hellebore**, *Marrubium*; - **horse** (W.I.), *Portlandia*; - **ipecacuanha**, *Ionidium Ipecacuanha* Vent.; - **mustard**, *Sinapis alba* L.; - **oak**, *Quercus alba* L.; - **Pareira root**, *Abuta*; - **pitch**, a form of common resin; - **rot**, *Hydrocotyle*; - **water-lily**, *Nymphaea alba* L.; - **weed**, *Ageratum*, (Am.) *Chrysanthemum Leucanthemum* L.; - **wood**, *Oreodaphne*, *Tecoma*, &c.
Whiteheadia Harv. Liliaceae (V). 1 S. Afr.
Whitfieldia Hook. Acanthaceae (IV. A). 6 trop. Afr.
Whitfordia Elmer. Leguminosae (III. 8 or 6). 1 Phil. Is.
Whitlavia Harv. = *Phacelia* Juss. p.p. (II Hydrophyll.).
Whitlow grass, *Draba*; - **wort** (Am.), *Paronychia*.
Whitneya A. Gray. Compositae (6). 1 California.
Whorl (l. &c.), several at a node; **false -**, *Labiatae*.
Whortle berry, *Vaccinium Myrtillus* L.
Wiasemskya Klotzsch. Rubiaceae. Nomen.
Wiborgia Roth. = *Galinsoga* Ruiz et Pav. (Comp.).
Wiborgia Thunb. Leguminosae (III. 3). 10 S. Afr.
Widdringtonia Endl. (*Callitris* p.p.). Coniferae (Pinaceae 34; see C. for gen. char.). 5 trop. and S. Afr. Cf. Masters, Notes on W., in *Linn. Soc. Journ.* 37, p. 267.
Widgrenia Malme. Asclepiadaceae (II. 1). 1 Minas Geraes.
Wiedemannia Fisch. et Mey. Labiatae (VI). 2 Armenia.

- Wielandia** Baill. Euphorbiaceae (A. I. 1). 1 Seychelles.
- Wiesneria** (*Wisneria*) M. Mich. Alismaceae. 3 palaeotrop.
- Wig tree**, *Rhus Cotinus* L.
- Wigandia** H. B. et K. Hydrophyllaceae. 6 Mts. of trop. Am.
- Wightia** Wall. Scrophulariaceae (II. 4). 2 Himalaya, Borneo.
- Wikstroemia** Endl. Thymelaeaceae. 20 Indomal., China. Some are parthenogenetic.
- Wilbrandia** Presl. Boraginaceae (inc. sed.). 1 Martinique.
- Wilbrandia** Silva Manso. Cucurbitaceae (2). 7 Brazil.
- Wilcoxia** Britton et Rose (*Cereus* p.p.). Cact. (III. 1). 2 S.W. U.S., Mex.
- Wild allspice** (Am.), *Lindera*; - **bean** (Am.), *Apios*; - **chamomile** (Am.), *Matricaria*; - **ginger** (Am.), *Asarum*; - **hyacinth**, *Scilla*.
- Wilde preume** (S. Afr.), *Pappia*.
- Wilga** (Austr.), *Geijera parviflora* Lindl.
- Wilkesia** A. Gray. Compositae (5). 2 Hawaiian Is. Small trees.
- Wilkiea** F. Muell. (*Kibara* p.p. *BH.*). Monimiaceae. 5 E. Austr.
- Willardia** Rose. Leguminosae (III. 6). 1 Mexico. Timber.
- Willdenowia** Thunb. Restionaceae. 15 S. Afr. The stems of some are used in making brooms.
- Willemetia** Neck. (*Chondrilla* *BH.*). Compositae (13). 2 Medit.
- Williamsia** Merrill. Rubiaceae (I. 7). 1 Phil. Is.
- Willisia** Wmg. Podostemaceae. 1 S. India. There is a small thallus, with closely crowded erect shoots with 4 closely packed ranks of scaly l., and ribbon-like l. at the tips. Each shoot bears one fl. (cf. Willis in *Ann. Perad.* 1, p. 369, 1902).
- Willkommia** Hackel. Gramineae (II). 4 S.W. and trop. Afr.
- Willow**, *Salix*; - **herb**, *Epilobium*.
- Willughbaeya** Neck. (*Mikania* p.p.). Compositae (2). 10 Am.
- Willughbeia** Roxb. Apocynaceae (I. 1). 10 Indomal. Some, e.g. *W. edulis* Roxb. (Assam—Borneo), and *W. firma* Bl. (Java, &c.), contain rubber in their latex, and are used as sources of rubber.
- Wilsonia** R. Br. Convolvulaceae (I). 4 Austr.
- Wimmeria** Schlechtd. Celastraceae. 6 Mexico, C. Am.
- Winchia** A. DC. Apocynaceae (I. 1). 1 Martaban.
- Wind fertilisation**, see Pollination; - **flower**, *Anemone*; **seed-distr. by** -, see Dispersal of seeds.
- Windsor bean**, *Vicia Faba* L.
- Wine palm**, *Borassus*, *Caryota*, *Phoenix*, *Raphia*, &c.
- Wings on fruit**, cf. Dispersal; **on ovary**, *Leguminosae*, *Begonia*, &c.; **on stem**, *Baccharis*.
- Winklera** Regel. Cruciferae (4). 1 Turkestan.
- Winklerella** Engl. Podostemaceae. 1 trop. Afr.
- Winter aconite**, *Eranthis hyemalis* Salisb.; - **berry** (Am., W.I.), *Ilex*; - **buds**, see Buds; - **cherry**, *Physalis*; - **cress**, *Barbarea*; - **green**, *Gaultheria*, *Pyrola*; - -, **chickweed**, *Trientalis*; - **heliotrope**, *Petasites*.
- Winter's bark**, *Drimys Winteri* Forst.
- Winterana** L. (*Canella* P. Br.). Winteranaceae. 2 W.I., trop. Am. *W. Canella* L. yields the medicinal Canella bark.
- Winteranaceae** (*Canellaceae*; *EP.*, *BH.*). Dicots. (Archichl. Parie-

tales). 4 gen., 7 sp., with marked discontinuity in distr. (S. Am.; E. Afr., Madag.). Trees with alt., leathery, entire, exstip., gland-dotted l. Fls. sol. or in racemes or cymes, ♀, reg. K 4—5, imbr.; C 4—5 free or united, or 0; A (∞) completely united into a tube with extr. anthers; $\bar{G}$ (2—5), 1-loc., with 2—∞ semi-anatr. ov. on each parietal plac. Berry. Embryo straight or slightly curved in rich endosp. *Genera*: *Cinnamodendron*, *Cinnamosma*, *Warburgia*, *Winterana*.

Wire grass, *Eleusine*, *Paspalum*, *Poa*, &c.

Wislizenia Engelm. Capparidaceae (v). 2 S.W. U.S.

Wisneria (*Wiesneria*) M. Micheli. Alismaceae. 3 palaeotrop.

Wissadula Medic. Malvaceae (2). 15 trop.

Wistaria Nutt. (*Bradburya* Rafin. in part, *Kraunhia* Rafin.). Leguminosae (III. 6). 5 China, Japan, E. N. Am. *W. Chinensis* DC. (China) is a climbing shrub often cult. orn. sweet-scented fls. The floral mech. like *Trifolium*. The pods explode violently.

Witch-hazel, *Hamamelis*; -es' broom, *Betula*.

Withania Pauq. Solanaceae (2). 5 palaeotrop. and subtrop. *W. coagulans* Dun. is used in India in preparing cheese.

Witheringia L'Hérit. = *Bassovia* Aubl. (Solan.).

Witsenia Thunb. Iridaceae (II). 1 Cape Colony. Cult. orn. fl.

Wittia K. Schum. Cactaceae (III. 1). 1 Brazil.

Wittmackia Mez (*Aechmea* p.p.). Bromel. (4). 2 W.I., E. trop. S. Am.

Wittrockia Lindau. Bromeliaceae. 1 Brazil.

Wittsteinia F. Muell. Ericaceae (II. 2). 1 S.E. Austr. Ov. inf. Berry.

Woad, *Isatis tinctoria* L.; -waxen (Am.), *Genista*.

Woehleria Griseb. Amarantaceae (3). 1 Cuba.

Wolf's bane, *Aconitum*; -milk, *Euphorbia*.

Wolffia Horkel ex Schleid. Lemnaceae. 12 trop. and temp. *W. arrhiza* Wimm. in Brit. (the smallest of flowering plants).

Wolffiella Hegelm. (*Wolffia* p.p.). Lemnaceae. 5 Am.

Wolffia Dennst. Zingiberaceae (inc. sed.). 1 Indomal.

Wollastonia DC. ex Decne. = *Wedelia* Jacq. p.p. (Comp.).

Wood cf. Timber; -anemone, *Anemone nemorosa* L.; -apple, *Feronia*; **Arar** -, *Wiadringtonia quadrivalvis* Mast.; **assegai** -, *Curtisia*; -avens, *Geum*; **bass** -, *Tilia americana* L.; **beef** -, *Casuarina*, *Stenocarpus*, *Swartzia*; -betony, *Stachys*; -bine, *Lonicera Periclymenum* L.; **bow** -, *Maclura*; **black** -, *Acacia*, *Dalbergia*; **Brazil** -, *Caesalpinia*; **cam** -, *Baphia*; **Campeachy** -, *Haematoxylon*; **Canary white** -, *Liriodendron*; **Chittagong** -, *Chickrassia*; **East Indian rose** -, *Dalbergia*; **Indian red** -, *Chickrassia*; **iron** -, *Mesua*, &c., &c.; -fern (Am.), *Aspidium*; **lance** -, *Duguetia*; **lever** -, *Ostrya*; **log** -, *Haematoxylon*; -nettle (Am.), *Laportea*; -oil, *Aleurites*, *Dipterocarpus*, &c.; **peach** -, *Caesalpinia*; **porcupine** -, *Cocos*; -ruff, *Asperula odorata* L.; -rush, *Luzula*; -sage, *Teucrium*; **sandal** -, **Sanders** -, *Santalum*, *Pterocarpus*; **sappan** -, *Caesalpinia*; -sorrel, *Oxalis*; **spindle** -, *Euonymus*; **Trincomali** -, *Berrya*; **yellow** -, *Cladrastis*.
And cf. Timber.

Woodburnia Prain. Araliaceae (1). 1 Burma.

Wooden pear, *Xylomelum*.

Woodfordia Salisb. Lythraceae. 2, 1 Abyss., and 1 (*W. floribunda* Salisb.) Madag., Ind., Ceyl., China, Timor.

Woodia Schlechter. Asclepiadaceae (II. 1). 4 S. Afr.

Woodrowia Stapf. Gramineae (8). 1 India.

Woodsia R. Br. Polypodiaceae. 25 alpine and arctic. *W. ilvensis* Br. and *W. hyperborea* Br. rare alpine ferns in Brit.

Woodwardia Sm. Polypodiaceae. 7*.

Woollsia F. Muell. (*Lysinema* EP.). Epacridaceae (2). 1 E. Austr.

Woottonia Greene. Compositae (5). 1 New Mexico.

Worcesterianthus Merrill. Olacaceae. 1 Phil. Is.

Worm grass (Am., W.I.), *Spigelia Anthelmia* L.; - seed, *Chenopodium*; - wood, *Artemisia*.

Wermia Rottb. (*Dillenia* p.p. EP.). Dilleniaceae. 20 trop. As., Afr.
The bud is protected by a sheathing petiole.

Wormskioldia Thonn. Turneraceae. 8 trop. Afr.

Wound wort, *Stachys Betonica* Benth.

Wourali, *Strychnos toxifera* Schomb.

Wrack grass, *Zostera*.

Wrightia R. Br. Apocynaceae (II. 2). 14 palaeotrop.

Wrixonia F. Muell. Labiatae (II). 1 W. Austr.

Wulfenia Jacq. Scrophulariaceae (III. 1). 3 E. Medit., Himal.

Wulffia Neck. Compositae (5). 2 W.I., S. Am.

Wulfhorstia C. DC. Meliaceae (II). 1 trop. Afr.

Wulschlaegelia Reichb. f. Orchidaceae (II. 2). 2 W.I., Brazil.

Wunderlichia Riedel. Compositae (12). 3 Brazil.

Wunschmannia Urb. (*Bignonia* p.p.). Bignoniaceae (1). 1 Haiti.

Wurmbea Thunb. Liliaceae (1). 7 S. and S. trop. Afr., W. Austr.

Wych elm, *Ulmus montana* With.

Wyethia Nutt. Compositae (5). 12 W. N. Am.

Wyomingia A. Nelson. Compositae (3). 2 Wyoming.

Xanth-, xantho- (Gr. pref.), yellow.

Xantheranthemum Lindau (*Chamaeranthemum* BH.). Acanthaceae (IV B). 1 Peru. Cult. orn. fl.

Xanthisma DC. Compositae (3). 1 Texas. Cult. orn. fl.

Xanthium (Tourn.) L. Compositae (5). 4 Medit. They have been so widely distr. by man (unintentionally) that it is hard to discover their native place. Fls. in unisexual heads, single or in axillary cymes, the ♂ at the ends of the branches. The ♀ head has 2 fls., enclosed in a prickly gamophyllous invol., only the styles projecting from it through openings in the two horns of the invol. The frs. are enclosed in the hard woody invol., which is covered with hooks and well suited to animal-distr. One sp. has gradually spread in this way from the East of Europe. "In 1828 it was brought into Wallachia by the Cossack horses, whose manes and tails were covered with the burrs. It travelled in Hungarian wool, and in cattle from the same region, to Regensburg, and on to Hamburg, appearing here and there on the way." Strenuous laws for its extirpation have been enforced in South Africa, where at one time it had become so common as seriously to impair the value of the wool.

Xanthocephalum Willd. Compositae (3). 12 warm Am.

- Xanthoceras** Bunge. Sapindaceae (II). 1 N. China. Ed. seed.
- Xanthocercis** Baill. Leguminosae (III. 8). 1 Madag.
- Xanthochymus** Roxb. = *Garcinia* L. p.p. (Guttif.).
- Xanthopappus** C. Winkler. Compositae (II). 1 N. China.
- Xanthophyllum** Roxb. Polygalaceae. 45 Indomal. G 1-loc. with parietal plac. Nut one-seeded.
- Xanthophytum** Reinw. Rubiaceae (I. 2). 3 Java to Fiji.
- Xanthorrhiza** Marshall (*Zanthorrhiza*). Ranuncul. (2). 1 Atl. N. Am.
- Xanthorrhoea** Sm. Liliaceae (III). 11 Austr. The best known is *X. hastilis* R. Br., the grass-tree, or black-boy, a char. plant of the Austr. veg. It has the habit of an Aloe or Dasylirion, with a long bulrush-like spike of fls. (really cymose as may be seen from the many bracts on the individual fl.-stalks). P sepaloid (X. is placed in Juncaceae by Benth.-Hooker). From the bases of the old leaves trickles a resin, used in making varnish, sealing-wax, &c.
- Xanthosia** Rudge. Umbelliferae (I. 1). 15 Austr. The umbels in some are reduced to single fls.
- Xanthosoma** Schott. Araceae (VI). 20 trop. Am., W.I. Large herbs (fig. in Kerner's *Nat. Hist.*). *X. appendiculatum* Schott has a pocket at the back of the leaf due to a tangential division of the embryonic leaf. Fls. monoec., naked; synandria. Rhiz. of some ed. like *Colocasias*. Cult. (yautia).
- Xanthostemon** F. Muell. Myrtaceae (II. 1). 18 New Caled., E. Austr.
- Xanthoxalis** Small (*Oxalis* p.p.). Oxalidaceae. 15 N. Am.
- Xanthoxylum** J. F. Gmel. (*Zanthoxylum* L. q.v.). Rutaceae (I). 9 temp. E. As., N. Am.
- Xatardia** Meissn. Umbelliferae (III. 5). 1 Pyrenees.
- Xenia**, direct influence of foreign pollen on the mother pl.
- Xenochloa** Lichtenstein. Gramineae (inc. sed.). 1 S. Afr.
- Xenodendron** K. Schum. et Lauterb. Sonneratiaceae. 1 New Guinea.
- Xenogamy**, pollination from another plant.
- Xenophya** Schott. Araceae (VII). 1 New Guinea.
- Xeraea** L. = *Gomphrena* L. (Amarant.).
- Xeranthemum** Tourn. ex Linn. Compositae (II). 6 Medit., Orient.
- Xero-** (Gr. pref.), dry; **-chastic**, opening by drying; **-hylium** (Cl.), a dry forest formation; **-phile**, **-phytic**, adj. forms of **-phytes**, pl. living where the water supply is limited (i.e. esp. in the subtropics, or as halophytes or epiphytes), and with various arrangements reducing transpiration. Nearly all have thick cuticle, thick or leathery l., reduced number of stomata, smaller intercellular spaces. Some have (1) stomata sunk in pits, often covered with hair, *Aloe*, *Nerium*, *Pinus*, or in grooves, *Cactaceae*, *Capparidaceae*, *Cassiope*, *Casuarina*, *Cheilanthes*, *Empetrum*, *Equisetum*, *Phylla*, *Rosmarinus*, *Spartium*, *Vaccinium*; (2) l. rolling up with stomata on hollow side in dry air, *Ammophila*, *Stipa*, and other grasses; (3) surface covering of hair, *Helichrysum*, *Leontopodium*, *Stachys*, or wax, *Agave*, *Aloe*, many *Crassulaceae* and *Liliaceae*, or of silica, *Crassula*; (4) thick sap, *Aloe*; (5) overlapping of l., *Aloe*, *Apicra*, *Calluna*, *Crassulaceae*, *Gasteria*; (6) tufted growth, *Asorella*, *Draba*, *Raoulia*, and many alpine, e.g. *Androsace*, *Gnaphalium*; (7) reduction of transpiring surface in various ways, *Aspalathus*, *Baccharis*, *Casuarina*, *Coni-*

ferae, *Cupressus*, *Cytisus*, *Empetraceae*, *Epacridaceae*, *Ericaceae*, *Genista*, *Grevillea*, *Hakea*, *Juncus*, *Pinus*, *Restio*, *Rhamnaceae*, *Rubus*, *Russellia*, *Rutaceae* (*Diosma*), *Spartium*, *Ulex*, *Veronica*; (8) phylloclades, *Bossiaea*, *Carmichaelia*, *Colletia*, *Hibbertia*, *Muehlenbeckia*, *Phyllanthus*, *Ruscus*, *Semele*, phyllodes, *Acacia*, *Oxalis*, twisted l., *Eucalyptus*, isobilateral l., *Iris*, *Narthecium*, *Phormium*; (9) sleep-movement of l., *Leguminosae*; (10) storage of water in aqueous tissue, *Aeschynanthus*, *Peperomia*, or in whole or large part of the (succulent) plant, *Agave*, *Aizoaceae*, *Aloe*, *Anacampseros*, *Asclepiadaceae*, *Cactaceae*, *Ceropegia*, *Crassulaceae*, *Cynanchum*, *Drymoglossum*, *Echidnopsis*, *Euphorbia*, *Foucroya*, *Gasteria*, *Haworthia*, *Huernia*, *Mesembryanthemum*, *Salicornia*, *Sansevieria*, *Sarcocaulon*, *Sarcolemma*, *Sempervivum*, *Senecio*, *Stapelia*, and the peculiar cases of *Bombacaceae* and *Bromeliaceae*. Bud-protection is common; the fls. are usu. produced in the dry season, and the seeds often protected against drought. Cf. also *Acantholimon*, *Acanthophyllum*, *Acanthosicyos*, *Acanthus*, *Adenium*, *Adenostoma*, *Alhagi*, *Amaryllidaceae*, *Argyrolobium*, *Artemisia*, *Astragalus*, *Banksia*, *Beschorneria*, *Boucerosia*, *Calibanus*, *Chenopodiaceae*, *Cochlospermum*, *Convolvulaceae*, *Dasylium*, *Espeletia*, *Ephedra*, *Geissoloma*, *Helipterum*, *Jatropha*, *Koeberlinia*, *Labiatae*, *Larrea*, *Lewisia*, *Lycopodium*, *Nolina*, *Opuntia*, *Othonna*, *Penaeaceae*, *Polygonum*, *Prosopis*, *Proteaceae*, *Resedaceae*, *Saxifraga*, *Sedum*, *Selaginella*, *Stackhousiaceae*, *Stylidiaceae*, *Tamariscaceae*, *Testudinaria*, *Velloziaceae*, *Verbenaceae*, *Welwitschia*, *Zygophyllaceae*. Cf. also Epiphytes, Halophytes, Tropophytes, and see Schimper's *Geography of Plants*; Warming, *Ecological Plant Geography*, &c.

Xerochlamys Baker. *Chlaenaceae*. 1 S. Madag.

Xerochloa R. Br. *Gramineae* (5). 3 Austr.

Xerocladia Harv. *Leguminosae* (1. 4). 1 temp. S. Afr.

Xerococcus Oerst. *Rubiaceae* (1. 7). 1 Costa Rica.

Xeronema Brongn. et Gris. *Liliaceae* (III). 1 New Caled.

Xerophyllum Rich. in Michx. *Liliaceae* (1). 3 N. Am.

Xerophyta Juss. = *Vellozia* Vand. (*BH.*) = *Barbacenia* Vand. p.p.

Xeroplana Briq. *Verbenaceae* (2). 1 S. Afr.

Xerorchis Schlechter. *Orchidaceae* (II. 7). 1 Manaos.

Xerospermum Blume. *Sapindaceae* (1). 8 S.E. As., Malay Archip.

Xerotes R. Br. (*Lomandra EP.*). *Juncaceae*. 32 Austr.

Xerotia Oliv. *Caryophyllaceae* (1. 3). 1 Arabia.

Ximenesia Cav. = *Verbesina* L. p.p. (Comp.).

Ximения Plum. ex L. *Olcaceae*. 5 trop. *X. americana* L. good wood.

Xiphagrostis Coville (*Saccharum* p.p.). *Gramineae* (2). 1 Malaya, &c.

Xiphidium Loebl. *Haemodoraceae*. 2 trop. Am., W.I.

Xiphion Tourn. ex Mill. = *Iris* Tourn. (*Irid.*).

Xolisma Rafin. (*Andromeda* p.p.). *Ericaceae* (II. 1). 4 N. Am.

Xylanche G. Beck. *Orobanchaceae*. 1 Himalaya.

Xylem, the wood of the vascular bundles, of stem or root.

Xylia Benth. *Leguminosae* (1. 5). 3 trop. As., Afr. Good timber.

Xylinabaria Pierre. *Apocynaceae* (II. 1). 2 Indochina.

Xylobium Lindl. *Orchidaceae* (II. 12). 24 trop. Am. Cult. orn. fl.

Xylocalyx Balf. f. *Scrophulariaceae* (III. 2). 1 Socotra.

- Xylocarpus** Koen. (*Carapa* BH.). Meliaceae (III). 2 palaeotrop. coasts.
- Xylochlaena** Baill. Chlaenaceae. 1 N. Madag.
- Xylobolus** O. Ktze. = *Xylia* Benth. (Legum.).
- Xylomelum** Sm. Proteaceae (II). 4 Austr. The fruits are known as wooden pears, being of the size of a large pear, and looking ed. at first glance. Inside is a thick wall of woody tissue enveloping the winged seeds. It splits along the post. side.
- Xylonagra** Donn. Sm. et Rose (*Hauya* p.p.). Onagr. (2). 1 Lower Calif.
- Xylophacos** Rydberg (*Astragalus* p.p.). Legum. (III. 6). 10 N. Am.
- Xylophragma** Sprague (*Tecoma* p.p.). Bignoniaceae (2). Braz., Peru.
- Xylophylla** L. = *Phyllanthus* L. p.p. (the sp. with phylloclades).
- Xylopia** L. Anonaceae (4). 60 trop. Fr. used as peppers.
- Xylopleurum** Spach (*Oenothera* p.p. BH.). Onagr. (2). 10 trop. Am. Cult.
- Xylorhiza** Nutt. (*Aster* p.p.). Compositae (3). 5 N. Am.
- Xylosma** Forst. f. (*Myroxylon* Forst.). Flacourtiaceae (4). 45 trop.
- Xylosteon** Tourn. ex Adans. (*Lonicera* p.p.). Caprifoliaceae. 3 N. Am.
- Xylotheca** Hochst. (*Oncoba* p.p.). Flacourtiaceae (2). 10 trop. Afr.
- Xymalos** Baill. (*Xylosma* p.p.). Flacourtiaceae (inc. sed.). 1 Natal.
- Xyridaceae**. Monocot. (Farinosae; Coronarieae BH.). 2 gen. (Xyris, Abolboda), 70 sp. trop. and subtrop., mostly Am. Mostly marsh plants, herbaceous, tufted, with radical sheathing l. and spikes or heads of $\frac{3}{8}$ fls. P heterochlam. K 3, the lat. sepals small, the ant. large, enclosing the corolla; C (3); A 3, epipet., the outer whorl absent or repres. by stds.; G (3), 1-loc. or imperfectly 3-loc., with parietal or free basal plac. and ∞ orthotr. ov. Caps. Embryo small, in mealy endosp. [See review in *Bot. Gaz.* 1895, p. 313.]
- Xyrideae** (BH.) = Xyridaceae.
- Xyris** Gronov. ex L. Xyridaceae. 60 trop. and subtrop.
- Xysmalobium** R. Br. Asclepiadaceae (II. 1). 20 S. and trop. Afr.
- Xystris** Schreb. Inc. sed. Nomen.
- Xystrolobus** Gagnep. Hydrocharidaceae: 1 Yunnan.
- Yacca tree** (W.I.), *Podocarpus*.
- Yam**, *Dioscorea*; - bean, *Pachyrhizus*, *Dolichos*.
- Yard grass** (Am.), *Eleusine*.
- Yarrow**, *Achillea Millefolium* L.
- Yate**, *Eucalyptus cornuta* Labill.
- Yaupon** (Am.), *Ilex Cassine* L.; - grass (Am.), *Eleusine*.
- Yautia**, *Xanthosoma*.
- Yaw-weed** (W.), *Morinda umbellata* L.
- Yellow archangel**, *Lamium*; - bark, *Cinchona*; - berries, *Rhamnus infectoria* L.; - bird's nest, *Monotropa*; - bugle, *Ajuga*; - cedar, *Chamaecyparis*; - cress, *Barbarea*; - deal, *Pinus sylvestris* L.; - flag, *Iris Pseudacorus* L.; - horned poppy, *Glaucium*; - loosestrife, *Lysimachia vulgaris* L.; - pimpernel, *Lysimachia nemorum* L.; - pine, *Pinus echinata* Mill.; - puccoon, *Hydrastis*; - rattle, *Rhinanthus*; - rocket, *Barbarea*; - seal, *Hydrastis*; - toadflax, *Linaria*; - water lily, *Nuphar luteum* Sibth. et Sm.; - wood, *Cladrastis*; - wort, *Chlora*.

Verba buena, *Micromeria*; -mate, *Ilex paraguensis* A. St Hil.

Yew, *Taxus baccata* L.

Ylang-ylang, *Cananga odorata* Hook. f.

Yoania Maxim. Orchidaceae (II. 2). 1 Japan.

Yorkshire fog, *Holcus*.

Young fustic, *Rhus Cotinus* L.

Youngia Cass. = *Crepis* Vaill. p.p. (Comp.).

Ypsilandra Franch. Liliaceae (I). 1 Tibet.

Yuca, cassava, *Manihot utilisima* Pohl, &c.

Yucca Dill. ex L. Liliaceae (VI). 30 S. U.S., Mexico, &c. Many cult. orn. (Adam's needle). Stem short, growing in thickness, and branching occasionally (*cf.* *Dracaena*); at the end is a rosette of fleshy and pointed l. Fls. large, white, in panicle. Remarkable mode of pollination (for details and figures see Riley in *3rd Ann. Rep. Missouri Bot. Gdn.* 1892). This is one of the few cases of mutual dependence and adaptation of a single fl. and a single insect—*Pronuba*, a moth. The fl. emits its perfume esp. at night, and is then visited by the moths. The female has a long ovipositor with which she can penetrate the tissue of the ovary of the fl., and possesses peculiar prehensile, spinous, maxillary tentacles confined to the genus. She begins soon after dark, collecting a load of pollen, and shaping it into a pellet about thrice as large as her head. She then flies to another fl. and deposits a few eggs in the ovary, piercing its wall with her ovipositor. Having done this she climbs to the top and presses the ball of pollen into the stigma. The ovules are thus fertilised, and are so numerous that there are plenty for the larvae to feed upon and also to repr. the plant.

The leaves of *Y. filamentosa* L. and other sp. furnish an excellent fibre (*cf.* *Agave*).

Zaa Baill. (*Tabeuia* p.p.). Bignoniaceae (4). 1 Madag.

Zacintha (Tourn.) L., Gaertn. Compositae (13). 1 Medit.

Zaczatea Baill. (*Raphiacme* EP.). Asclepiadaceae (1). 1 Angola.

Zahlbrucknera Reichb. Saxifragaceae (1). 1 E. Eur.

Zalacca Rumph. Palmae (III). 10 Indomal. Fr. ed.

Zalaccella Becc. (*Calamus* p.p.). Palmae (III. 2). 1 Cochinchina.

Zaluzania Pers. Compositae (5). 10 C. Am.

Zaluzianskya F. W. Schmidt. Scrophulariaceae (II. 5). 20 S. Afr.

Zamia L. Cycadaceae (see fam. for gen. char.). 30 trop Am.

Zamioculcas Schott. Araceae (1). 1 E. trop. Afr. L. pinnate.

Zanha Hiern. Burseraceae. 1 Angola.

Zannichellia Mich. ex L. Potamogetonaceae. 1 cosmop., *Z. palustris* L., in fresh or brackish water. Fls. monoec.; ♀ term.; from the axil of its lower bracteole springs the ♂. From the axil of the upper a new branch may arise, bearing ♀ and ♂ fls. again. The ♂ fl. consists of 1 or 2 sta., the ♀ of usu. 4 cpls., surrounded by a small cup-like P. Pollination under water as in *Zostera*, but the pollen is spherical.

Zanonia Linn. Cucurbitaceae (1). 2 Indomal., *Z. indica* L., *Z. macrocarpa* Blume. The latter has enormous flat winged seeds, remarkably like those of many Bignoniaceae.

Zantedeschia Spreng. (*Richardia* Kunth, *q.v.*). Araceae (v). 10 S. Afr.

Zanthorhiza L'Hérit. Ranuncul. (2). 1 Atl. N. Am. Fls. 5-merous.
Zanthoxylum L. (BH. incl. *Fagara* L.). Rutaceae (1). 20 temp. E. As., N. Am. Several cult. orn. shrubs. *Z. piperitum* DC., the Japan pepper, yields fr. used as a condiment. The bark of *Z. fraxineum* Willd. (prickly ash or toothache-tree) is used in Am. as a remedy for toothache. Some yield good timber.

Zapania Lam. = *Lippia* Houst. p.p. (Verben.).

Zataria Boiss. Labiatae (VI). 1 Persia, Afghanistan.

Zauschneria Presl. Onagraceae (2). 1 Calif., Mexico. Cult. orn. fl.

Zea L. Gramineae (1). 1 sp., *Zea Mays* L., the maize or Indian corn, apparently originally Mexican, now cult. in most trop. and subtrop. regions. A tall annual grass, with term. ♂ infl. and ♀ infls. in the axils of the foliage-l. ♂ spikelets in pairs, 2-flowered. The ♀ infl. forms a 'cob' with long filamentous stigmas hanging out at the end (fls. pollinated by wind). The cob is enveloped when young by large spathe-l., and consists of combined spikes; each two rows of fls. visible on its surface correspond to one spike of fls. The cult. forms are 8-, 10-, 12-, or 24-rowed. Cf. *Euchlaena*, in which the spikes are distinct and form a tuft. Each spike consists of one-flowered spikelets. Fr. the familiar maize-seed, in which the structure of a grass-fruit can easily be made out; the embryo occupies the white portion near the pointed end.

A most important cereal; it is termed corn in the U.S., like wheat in England, oats in Scotland. The grain is made into flour (Indian meal) or cooked without grinding; green corn (unripe cobs) forms a favourite vegetable, the l. are useful as fodder, the dry cobs as firing; the spathes are used in paper-making, and so on. [See Harshberger's monograph (botanical and economic) in *Contrib. Bot. Lab. Univ. Pennsylv.* 1. 1893.]

Zebrina Schnitzl. Commelinaceae. 2 Mexico, Texas. Cult. orn. fol.

Zedoary, *Curcuma Zedoaria* Rosc.

Zehneria Endl. = *Melothria* L. p.p. (Cucurb.).

Zeia Lunell (*Agropyron* p.p.). Gramineae (12). 15 N. Am.

Zelkova Spach. Ulmaceae. 4 N. temp. |*. Timber valuable.

Zenkerella Taub. Leguminosae (II. 2). 1 Cameroons.

Zenkeria Trin. Gramineae (9). 2 India, Ceylon.

Zenkerina Engl. Acanthaceae (1). 1 Cameroons.

Zenkerophytum Engl. ex Diels. (*Syrrheonema* p.p.). Menispermaceae. 1 W. Afr.

Zenobia D. Don (*Andromeda* p.p. EP.). Ericaceae (II. 1). 1 N. Am.*

Zeocriton Beauv. = *Hordeum* Tourn. p.p. (Gram.).

Zephyra D. Don. Amaryllidaceae (III) (*Haemodor.* BH.). 1 Chili.

Zephyranthes Herb. Amaryllidaceae (1). 35 warm Am. Cult. orn. fl.

Zerdana Boiss. Cruciferae (4). 2 Mts. of Persia.

Zerumbet Garsault (*Kaempfera* p.p.). Zingiberaceae (1). 1 trop. As.

Zeugites P. Br. Gramineae (10). 6 trop. Am.

Zeuxine Lindl. Orchidaceae (II. 2). 20 trop. Afr., Indomal.

Zexmenia La Llave. Compositae (5). 40 trop. and subtrop. Am.

Zeyheria Mart. Bignoniaceae (2). 2 Brazil.

Zezeany (W.I.), *Sesamum indicum* L.

Zichya Hueg. = *Kennedya* Vent. p.p. (Legum.).

Zieria Sm. Rutaceae (1). 10 E. Austr. ✓

Zieridium Baill. Rutaceae (1). 1 New Caled.

Zilla Forsk. Cruciferae (2). 2 N. Afr.

Zimapania Engl. et Pax. Euphorbiaceae (A. II. 3). 1 Mexico.

Zimmermannia Pax. Euphorbiaceae (A. I. 1). 1 E. Afr.

Zingiber Adans. Zingiberaceae. Labellum large; opp. to it are the style and the petaloid fertile sta. The stigma has many rays. *Z. officinale* Rosc. is the ginger; it is always repr. by veg. methods, and is quite sterile (cf. *Musa*). It is largely cult.; the rhiz. are dug up and killed in boiling water. According to whether the rind is or is not scraped off, the product is known as 'scraped' or 'coated' ginger.

Zingiberaceae (EP.; *Scitamineae* p.p. BH.). Monocots. (Scitamineae). 35 gen., 800 sp., trop., chiefly Indomal. Perenn. herbs usu. with sympodial fleshy rhiz., often with tuberous roots. Aerial stem, if any, short; sometimes an apparent stem is formed as in *Musa* by the rolled up leaf-sheaths. L. 2-ranked, with short stalks and sheathing bases. At the top of the sheath is a char. ligule (cf. Gramineae). Fls. in racemes, heads, or cymes. Their morphology much discussed (see Eichler's *Blüthendiag.* or *Nat. Pfl.*). Bracteole often sheathing (as in fig.). K (3), the odd one ant., C 3, usu. different in colour and texture from the outer P-leaves. Of the possible 6 members of the A (two whorls), the post. one of the inner whorl is present as a fertile epipet. sta., and the other two of this whorl are united to form the petaloid *labellum* (not equivalent to that of Orchids), which may be 2- or 3-lobed; the ant. sta. of the outer whorl is always absent; the other two may be absent (as in *Renealmia*) or may be present as large leafy stds. right and left of the fertile sta. (cf. with Cannaceae and Marantaceae). G (3), 3-loc., with ∞ anatr. or semi-anatr. ov. Fr. usu. a loculic. caps. Seeds with perisperm. The fam. contains several economic plants; see *Curcuma*, *Costus*, *Alpinia*, *Zingiber*, *Amomum*, *Elettaria*.



Floral diagram of *Renealmia*, modified from Eichler, showing bract, sheathing bracteole, calyx, corolla, labellum (LAB), &c.

Classification and chief genera:

I. **ZINGIBEROIDEAE** (l. 2-ranked; lat. stds. different or wanting; pl. aromatic): *Hedychium*, *Kaempferia*, *Curcuma*, *Globose*, *Zingiber*, *Amomum*, *Renealmia*, *Alpinia*.

II. **COSTOIDEAE** (l. alt.; lat. stds. usu. wanting; sub-aerial parts not aromatic): *Costus*, *Tapeinochilus*.

✓ **Zinnia** L. Compositae (5). 12 N. Am., cult. orn. fl. L. opp. or whorled. Fr. winged.

Zinowiewia Turcz. Celastraceae. 1 Mexico.

Zippelia Blume. Piperaceae. 1 Java.

Zizania Gronov. ex Linn. Gramineae (6). 2 Am., N.E. As., *Z. aquatica* L. (*Hydrophyrum esculentum* Link), Canada rice, is used as a cereal by the N. Am. Indians.

- Zizaniopsis** Doell. et Aschers. Gramineae (6). 1 Brazil, U.S.
Zizia Koch (*Carum* p.p. *BH.*). Umbelliferae (III. 5). 2 N. Am.
Ziziphora L. Labiatae (VI). 12 Medit., C. As.
Ziziphus Tourn. ex L. Rhamnaceae. 40 Indomal., trop. Am., Afr., Austr., Medit. Stips. often repres. by thorns; one is sometimes recurved whilst the other is straight (*cf.* *Paliurus*); occasionally only one is developed. *Z. chloroxylon* Oliv. (cogwood; Jamaica) hard tough wood. Fr. of many ed.; those of *Z. Lotus* Lam. (Medit.) are said to be the Lotus fruits of antiquity; those of *Z. vulgaris* Lam. (E. Medit.) are known as French jujubes; those of *Z. Joazeiro* Mart. are used in Brazil as fodder. *Z. Spina-Christi* Willd. is said to have furnished the crown of thorns (*cf.* *Paliurus*).
Zoegea L. Compositae (11). 5 W. As.
Zoelleria Warb. Boraginaceae (IV). 1 New Guinea.
Zoidiogamy, fertilisation by spermatozoids.
Zoisia (*Zoysia*) Willd. Gramineae (3). 3 Masc. Is. to New Zealand.
Zollernia Maximil. et Nees. Leguminosae (II. 9). 5 Brazil.
Zollikoferia DC. = *Launaea* Cass. p.p. (Comp.).
Zollingeria Kurz. Sapindaceae (I). 2 Burma, Indochina.
Zombiana Baill. Myoporaceae. 1 trop. Afr.
Zomicarpa Schott. Araceae (VII). 3 S. Brazil.
Zomicarpella N.E. Br. Araceae (VII). 1 Colombia.
Zonanthemis Greene (*Hemizonia* p.p.). Compositae (5). 2 Calif.
Zonanthus Griseb. Gentianaceae (I). 1 Cuba.

Zones of vegetation, the six zones into which the earth can be divided, occupied by similar types of vegetation with the same periods of growth and the same general adaptation to environment. The divisions are climatic-ecological, and the systematic relationships of the plants are neglected (*cf.* *Floral Regions*).

I. *The northern Glacial Zone* (the arctic region, and all beyond the tree limit, whether towards the poles, or at high levels—the alpine zone). Period of growth usu. short, temperature low, soil liable to be hot in the day, cold at night. Vegetation mainly xerophytic; veg. repr. well marked.

II. *The northern Zone of cold winters* (from the N. limit of trees to the region where evergr. begin to predominate and the land is parched in summer). Period of growth 4—7 months; summers not usu. parching. Mesophytism predominant; vast areas covered by forests; heaths and other formations of drier areas common.

III. *The northern Zone of hot summers* (the sub trop. regions). No real winter, but perhaps an interruption of vegetation in Jan. Xerophytism well marked, though some regions are wet. Forest, copse (*e.g.* maqui, chaparral), steppe, and prairie all common.

IV. *The tropical Zone* (wherever in the trop. the rainfall is enough to prevent the formation of desert). No real interruption of vegetation. Forest (mesophytic) very common, also parkland or savannah.

V. *The southern Zone of hot summers*; much like III.

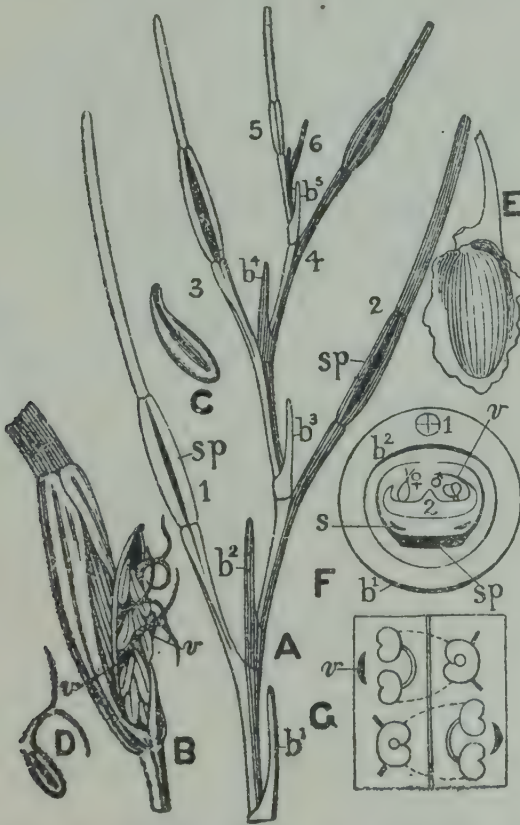
VI. *The southern cold Zone*; much like I.

See Schimper, *Plant Geography*; Warming, *Ecological Pl. Geog.*, &c.
Zoophily, pollination by animals.

Zornia J. F. Gmel. Leguminosae (III. 7). 12 trop., esp. Am.

Zosima Hoffm. (*Zozimia* EP.). Umbelliferae (III. 6). 6 W. As.

Zostera Linn. Potamogetonaceae. 6 temp., subarct., subtrop., in salt water on gently sloping shores. *Z. marina* L. and *Z. nana* Roth. in Brit. (eel-grass or grass-wrack). The lower part of the stem creeps, rooting as it advances, and has monopodial branching; the branches grow upwards and exhibit sympodial branching, complicated by union of axillary shoot to main shoot for some distance



- A. Diagram of branching in floral shoot. 1—6, successive shoots, every other one being shaded; b^1 , b^2 ...fore-leaves on these shoots; sp , spathes (not indicated in the upper shoots). B. Spathe of *Z. nana* with flattened spadix taken out; v , the retinaculum; $\times 2$. C and D. Half-anther and pistil of same, more enlarged. E. Fruit of *Z. marina*, the thin pericarp turned back to show the seed, $\times 2\frac{1}{2}$. F. Diagram of a main axis, 1, with its fore-leaf (b^1) and the axillary shoot 2, with its fore-leaf (b^2); sp , spathe borne on 2, surrounding the spadix; s , intravaginal scales; v , bracteole. G. Diagram of part of spadix with two flowers; v , bracteole.
- A, F, G, after Eichler; B, C, D, from *English Botany*; E, after Le Maout and Decaisne.

above its point of origin. This is most easily seen in the infl. region; the branching is that of a rhipidium, but shoot 2, which springs from the axil of a l. on shoot 1, is adnate to 1 up to the point at which the first l. is borne on 2; this l. occupies the angle between the two shoots where they separate. Shoot 1 (and 2, 3, &c. successively) is pushed aside and bears an infl. (Eichler's *Blüthendiag.* or *Nat. Pfl.* for details and figs.) L. long, linear, sheathing at base.

Infl. a flattened spadix, enclosed at flowering time in a spathe (the sheath of the uppermost l.). This is open down one side, and on the corresponding side of the spadix the fls. are borne, the essential organs forming two vertical rows, each composed of a cpl. and a sta. alt. On the outer side of the spadix next the sta. is often a small l. (*retinaculum* of systematic works). The midrib of the cpl. faces outwards. Each cpl. contains one ovule and has two flat stigmas. The sta. consists of two half anthers, joined by a small connective. It is difficult to decide what is the actual 'flower' in this plant; the usual view is that each sta. with the cpl. on the same level forms a fl., the *retinaculum* representing the bract.

	cpl.	sta.	ret.
ret.	sta.	cpl.	
	cpl.	sta.	ret.

Fert. peculiar, *Z.* being one of the water pl. most completely modified from the ancestral land-pl. type. Fl. submerged like the rest of the pl. The pollen grains are long threads of the *same* specific gravity as salt water, so that when discharged they float freely at any depth. The stigmas are very large, and thus have a good chance of catching some of the grains. The whole mech. is similar in principle to that of a wind-fert. pl. Fr. an achene. In winter it hibernates without any special modification. The pl. is largely used for packing glass, stuffing cushions, &c., esp. in Venice. [For further details see *fam.*, and Schenk's *Wassergewächse*.]

Zosterella Small. Pontederiaceae. 1 Pennsylvania.

Zoysia Willd. Gramineae (3). 3 Masc. Is. to New Zealand.

Zozimia Hoffm. Umbelliferae (III. 6). 6 W. As.

Zschokkea Muell.-Arg. (*Lacmellia* BH.). Apocynaceae (I. 1). 8 trop. S. Am.

Zuccagnia Cav. Leguminosae (II. 7). 1 Chili.

Zuccarinia Blume. Rubiaceae (I. 8). 1 Java.

Zuccarinia Maerklin. Inc. sed. Nomen.

Zuckia Standley. Chenopodiaceae (A). 1 S.W. U.S.

Zuelania A. Rich. (*Casearia* p.p. BH.). Flacourtiaceae (7). 2 W.I.

Zwackhia Sendtner. Boraginaceae (IV. 5). 1 S.E. Eur.

Zwartbast, *Royena lucida* L.

Zwingera Schreb. = *Simaba* Aubl. (Simarub.).

Zycona O. Ktze. = *Allendea* La Llave (Comp.).

Zygadenus Michx. Liliaceae (I). 12 N. Am., Siberia.

Zygalechemilla Rydberg (*Alchemilla* p.p.). Rosaceae (III. 5). 1 trop. Am.

Zyganthera N. E. Br. (*Pseudohydrosme* p.p.). Araceae (IV). 1 Gaboon.

Zygella Sp. Moore. Iridaceae (II). 1 Matto Grosso.

Zygia Walp. = *Albizia* Durazz. p.p. (Legum.).

Zygo- (Gr. pref.), yoke-; **-morphism**, symmetry about one plane through axis only, cf. floral diagrams of *Labiatae*, *Papaveraceae*, *Scrophulariaceae*; usu. antero-post., it is *diagonal* in *Solanaceae*, *transverse* in *Anigozanthos*, *Haemodoraceae*, some *Papaveraceae*, *right* and *left-handed* in *Cassia*, *Exacum*, *Saintpaulia*; **-te**, the cell produced by the union of the sexual gametes.

Zygotatemannia × Rolfe, **Zygocolax** × Rolfe, **Zygonisia** × Rolfe, **Zygomena** × Hort. Orchidaceae. Hybrids of *Zygopetalum* with *Batemannia*, *Colax*, *Aganisia*, and *Zygosepalum* (*Menadenium*).

- Zygodia** Benth. Apocynaceae (II. 1). 4 trop. Afr.
Zygogynum Baill. Magnoliaceae. 3 New Caled.
Zygomenes Salisb. = *Cyanotis* D. Don (Commel.).
Zygonerion Baill. (*Strophanthus* p.p.). Apocyn. (II. 1). 1 Angola.
Zygoon Hiern. Rubiaceae (I. 8). 1 Zambesi.
Zygopetalum Hook. (incl. *Pescatorea* Rchb. f.). Orchidaceae (II. 14). 20 trop. Am. The base of the column forms a chin. Cult. orn. fl.
Zygophyllaceae (EP., BII.). Dicots. (Archichl. Geraniales). 22 gen., 160 sp., xero- or halo-phytes, trop. and subtrop. Most are woody perennials; l. opp., stip., usu. hairy, fleshy or leathery. Fls. in cymes, reg., ♂. K 5; C 5; A 5 + 5, obdiplost. and with ligular appendages; G (5), 5-loc. with 1 or more pend. ov. in each loc. Fr. usu. a caps. Seeds with or without endosp. Guaiacum, Peganum, &c. furnish useful products. Chief genera: *Zygophyllum*, *Guaiacum*, *Porlieria*, *Larrea*, *Peganum*, *Tribulus*. Closely related to Rutaceae.
Zygophyllidium Small (*Euphorbia* p.p.). Euph. (A. II. 8). 1 N. Am.
Zygophyllum L. Zygophyllaceae. 6♂*, deserts and steppes. L. and twigs fleshy.
Zygoruellia Baill. Acanthaceae (IV. A). 1 Madag.
Zygosepalum Reichb. f. (*Zygopetalum* BH.). Orchid. (II. 14). 2 trop. S. Am.
Zygostates Lindl. Orchidaceae (II. 19). 4 Brazil.
Zygotelma Benth. Asclepiadaceae (I). 1 Siam.
Zygotelma Fourn. Asclepiadaceae (II. 1). 1 Brazil.
Zygostigma Griseb. Gentianaceae (I). 2 Brazil, Argentina.



*Suggestions for additions to and corrections of the
preceding pages can be noted on this slip, which
can be detached when desired, signed, and sent to
Dr J. C. Willis, c/o The University Press, Cambridge*



SUPPLEMENT.

TEXT CORRECTIONS, AND NEW GENERA.

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This supplement will be brought up to date at intervals.

- Abroma**, *A. augusta* for L. *read* L. f.
Acaena. For (III. 9) *read* (III. 5) and place A. before Acajou.
Acanthura. For (IV. B) *read* (IV. A).
Accidental, adventitious.
Achradelphia O. F. Cook (*Achras* p.p.). 1 S. Am. (*A. mammosa* L.).
Acmispon Rafin. (*Hosackia* p.p.). Leguminosae (III. 5). 6 N. Am.
Acrostigma O. F. Cook et Doyle. Palmae (IV. 1). 1 Colombia.
Acrosynanthus Urb. Rubiaceae (I. 3). 1 Cuba.
Adelocaryum Brand. Boraginaceae (IV. 1). 1 Tibet.
Adenorachis Nieuwland (*Aronia* p.p.). Rosaceae (II). 3 N. Am.
Adhesion, union of members of different whorls, *e.g.* C and A.
Adjustment (Cl.), functional response to stimuli.
Adnascens (Lat.), growing upon something.
Adoxa, *add* P homochlam.
Adverse, facing main axis.
Aeginalitis, *read* Aegialitis.
Afrotrewia Pax et K. Hoffm. Euphorbiaceae (A. II. 2). 1 Cameroons.
Agaloma Nieuwland (*Euphorbia* p.p.). Euphorbiaceae (A. II. 8). 14 N. Am.
Agrostemma, *add* Caryophyllaceae (II. 1).
Aiolon Luneli (*Anemone* p.p.). Ranunculaceae (3). 1 N. Am.
Aistopetalum Schlechter. Cunoniaceae. 2 New Guinea.
Aizoaceae. Line 7, *add* fl. ♂ reg.
Ajowan (for thymol), *Carum copticum* Benth. et Hook. f.
Ajugoides Makino (*Stachys* p.p.). Labiatae (VI). 1 Japan.
Alatus (Lat.), winged.
Alloniaceae = Nyctaginaceae.
Alpine rose, *Rhododendron ferrugineum* L.
Alternifolius (Lat.), alternate-leaved.
Amaryllidaceae. For G *read* G̃.
Ambianella A. Chevalier (*Mimusops* p.p.). Sapotaceae (2). 1 Congo.
Amblynotopsis Macbride (*Antiphytum* p.p.). Boraginaceae (IV. 4). 4 trop. N. Am.
Amelanchus Franz Müller ex V. Ros. (*Amelanchier* p.p.). Rosaceae (II). 3 N. temp.
Amides, crystallisable bodies, containing C, H, O and N; asparagin, &c

- Andropterum** Stapf. Gramineae (2). 1 Nyassaland.
- Anelsonia** Macbride et Payson (*Draba* p.p.). Cruciferae (4). 1 N.W. U.S.
- Animals.** For Seed-dispersal *read* Dispersal of Seeds.
- Anota** Schlechter (*Saccolabium* p.p.). Orchidaceae (II. 20). 1 Malaya.
- Antheroporum** Gagnepain. Leguminosae (III. 8). 2 Sikkim, Cochinchina.
- Apodiscus.** For Guiana *read* Guinea.
- Aranella** Barnhart ex Small (*Utricularia* p.p.).* Léntibulariaceae. 1 Florida, Cuba.
- Arisanorchis** Hayata. Orchidaceae (II. 2). 1 Formosa.
- Aristopetalum** Schlechter. Cunoniaceae. 2 New Guinea.
- Artemisiastrum** Rydberg (*Artemisia* p.p.). Compositae (7). 1 Calif.
- Azolla.** After *A. nilotica* *read* Decne.
- Balanophoraceae.** For *G* *read* *G*.
- Baliospermum:** for 4 sp. *read* 10.
- Barombia** Schlechter. Orchidaceae (II. 20). 1 Cameroons.
- Bathiea** Schlechter. Orchidaceae (II. 20). 1 Madag.
- Beckeria** Ridley, *read* Becheria.
- Beesia** Balf. f. et W. W. Smith. Ranunculaceae (1). 1 Burma, Yunnan.
- Belandra** Blake. Apocynaceae (II. 1). 1 Brit. Honduras.
- Betchea** Schlechter. Cunoniaceae. 5 New Guinea, N.E. Austr.
- Blandibractea** Wernham. Rubiaceae (I. 3). 1 Brazil.
- Bombacopsis** Pittier (*Pachira* p.p.). Bombacaceae. 2 Panama, Costa Rica.
- Bovleria** err. = Borreria.
- Brassica.** Line 2, after Cruciferae for (II. 10) *read* (2).
- Broussonetta,** *read* Broussonnetia.
- Callus** (in a grass), the swollen base of the inferior palea, adnate to the axis.
- Campos,** open grassy plains of Brazil, with groups or patches of trees.
- Camptophytum** Pierre ex A. Chevalier. Rubiaceae (inc. sed.). 1 Congo.
- Capillipedium** Stapf. Gramineae (2). 6 warm |*.
- Capitanopsis** Sp. Moore. Labiatae (VII). 1 Madag.
- Capporea,** *read* Capnorea.
- Carenophila** Ridley. Zingiberaceae (1). 1 Malay Peninsula.
- Carpentia** Ewart in Ewart et Davies. Convolv. (I.) 1 N. Austr.
- Caryophyllaceae.** In last para. after "4 groups" *read* of I.
- Catopsis.** Before W.I. *read* 10.
- Celeonia,** *read* Celebnia.
- Censer-mechanism.** For Seed-dispersal *read* Dispersal of Seeds.
- Chaboisseae,** *read* Chaboissea.
- Chaetothyla,** *read* Chaetothylax.
- Chamaecyparis.** *C. Lawsoniana* is from N.W. N. Am.
- Chamartemisia** Rydberg (*Tanacetum* p.p.). Compositae (7). 1 Nevada.
- Charlock.** *Sinapis alba* L.
- Chasmopodium** Stapf. Gramineae (2). 2 trop. Afr.
- Chloranthaceae.** Before perisperm *omit* no.
- Chorilepidella** Van Tiegh. (*Loranthus* p.p.). Loranthaceae. 1 Phil. Is.
- Chrysophae** Koso-Poliansky. Umbelliferae (III. 5). 2 E. Medit.

- Clarorivinia** Pax et K. Hoffm. (*Mallotus* p.p.). Euphorbiaceae (A. II. 2). 1 New Guinea.
- Cocos**. For *Palmae* (IV. 7) *read* (IV. 2).
- Coelopyrena** Valet. Rubiaceae (II. 5). 1 Amboina.
- Columelliaceae**, for *G* *read* *G*.
- Compositae**. In classification, *Inulaceae*, *read* (as 3).
- Conceveibastrum** Pax et K. Hoffm. (*Alchornea* p.p.). Euphorbiaceae (A. II. 2). 1 Brazil.
- Conocarpus**, *add* W.I.
- Cornaceae**, for *G* *read* *G*.
- Corollonema** Schlechter. Asclepiadaceae (II. 1). 1 Bolivia.
- Costaricia** H. Christ. Polypodiaceae. 1 Costa Rica.
- Cremnobates** Ridley. Rhizophoraceae. 1 New Guinea.
- Cymbidiella** Rolfe (*Cymbidium* p.p.). Orchidaceae (II. 17). 3 Madag.
- Cymopterus**. For (III. 6) *read* (III. 5).
- Cynopaema** Lunell (*Apocynum* p.p.). Apocynaceae (II. 1). 3 N. Am.
- Dasyptalum** Pierre ex A. Chevalier. Flacourtiaceae (1). 1 Congo.
- Davidia**. For *Cornaceae* *read* *Nyssaceae*.
- Delphiniastrum** Nieuwland = *Delphinium* Tourn. p.p.
- Desmopsis** Safford (*Unona* p.p.). Anonaceae (1). 5 C. Am.
- Desmos** Safford (*Unona* p.p.). Anonaceae (1). 30 |*.
- Deuteromallotus** Pax et K. Hoffm. (*Mallotus* p.p.). Euph. (A. II. 2). 1 Madag.
- Digitalis**. For (III. 11) *read* (III. 1).
- Diodella** Small. Rubiaceae (II. 10). 1 Florida, W.I.
- Dischidia**. For *Asclepiadaceae* (II. 4) *read* (II. 3).
- Dolichostegia** Schlechter. Asclepiadaceae. 1 Phil. Is.
- Echinaceae**, *read* *Echinacea*.
- Ecliptostelma** T. S. Brandege. Asclepiadaceae (II. 1). 1 Mexico.
- Eleutherostemon** Herzog (*Themistoclesia* p.p.). Ericaceae (III. 2). 1 Bolivia.
- Enanthe** Schlechter (*Vanda* p.p.). Orchidaceae (II. 20). 1 Phil. Is.
- Endospermum**. For 5 sp. *read* 10.
- Eremopogon** Stapf. Gramineae (2). 4 warm |*.
- Euclasta** Franch. Gramineae (2). 1 trop. Afr., Am.
- False asphodel**, *read* *Tofieldia*.
- Fenixia** Merrill. Compositae (5). 1 Phil. Is.
- Festuca**, After (Tourn.) *read* *L*.
- Floccose**, bearing tufts of hair.
- Gibbsia** Rendle in L. S. Gibbs. Urticaceae (3). 2 N.W. Dutch New Guinea.
- Giorgiella** De Wild. Passifloraceae. 1 Congo.
- Glume**, cf. *Cyperaceae*, *Gramineae*.
- Gonystilus**. For entirely *read* entire.
- Gramineae**, at end, to § 13, *add* Cf. Bamboos.
- Greengage**, a var. of plum.
- Guerreroia** Merrill. Compositae (5). 1 Phil. Is.
- Haemodoraceae**, line 5, after transv. *read* 4.
- Hecatostemon** Blake. Flacourtiaceae (7). 1 Venezuela.
- Helleborine**. For *Secapias* *read* *Serapias*.

Hernandiaceae, *add* fr. winged, no endosp.

Hippia F. W. Schmidt, *read* Hippion.

Hoyella Ridley. Asclepiadaceae (II. 3). 1 Sumatra.

Hydropectis Rydberg (*Pectis* p.p.). Compositae (6). 1 Mexico.

Hyperapsis, *read* Hyperaspis.

Hypogynium Nees in Stapf. Gramineae (2). 2 trop. Am., W. and S. Afr.

Idenburgia L. S. Gibbs. Monimiaceae. 2 N.W. Dutch New Guinea.

Ilocania Merrill. Cucurbitaceae (3). 1 Phil. Is.

Jardinea Steud. Gramineae (2). 3 trop. Afr.

Jolly brown, *read* Jolly, brown.

Juglandaceae. For stip. *read* exstip.

Jumellea Schlechter (*Angraecum* p.p.). Orchidaceae (II. 20). 12 Madagascar, Masc.

Kingiella Rolfe. Orchidaceae (II. 20). 5 Indomal.

Klaineastrum Pierre ex A. Chevalier. Melastomaceae (III). 1 Gaboon.

Koordersiochloa Merrill. Gramineae (9). 1 Java.

Lacaenae, *read* Lacaena.

Laretia, **Laricopsis** (after Larch) should follow Lardizabalaceae.

Leitneriaceae, for 22 sta. *read* 12.

Leptocentrum Schlechter. Orchidaceae (II. 20). 1 W. Afr.

Leucocorema Ridley. Icacinaceae. 1 New Guinea.

Linoma O. F. Cook (*Dictyosperma* p.p.). Palmae (IV. 1). 1 Mascarenes.

Litosiphon Pierre ex A. Chevalier (*Lovoa* p.p.). Meliaceae (II). 1 Congo.

Loranthaceae, p. 395, line 12 of 3rd para. for vicsin *read* viscin.

Loxsomopsis Christ. Polypodiaceae. 3 trop. Am.

Macrocatalpa Britton. Bignoniaceae (2). 3 W.I.

Mahoberberis C. K. Schneider. Hybrid, Mahonia-Berberis.

Mairella Lévêillé = Phelypaea Tourn. p.p. (Orob.).

Manuleopsis Thellung. Scrophulariaceae (II. 5). 1 Hereroland.

Meiomeria Standley (*Chenopodium* p.p.). Chenopodiaceae (A). 1 Mexico.

Meliaceae. *BH.* incl. § II of Rutaceae.

Meliadelpha should go below Meliaceae.

Melioschizzia, *read* Melioschinzia.

Miscanthidium Stapf. Gramineae (2). 4 trop. and S. Afr.

Mischopleura Wernham in Ridley. Ericaceae (I. 2). 2 New Guinea.

Monelasum, *read* Monelasmum.

Monotropha, *read* Monotropa.

Mormodes. For Orchidaceae (17) *read* (II. 11).

Musa, *add* The sp. cult. in the Canaries is *M. Cavendishii* Lambert ex Paxt. (China).

Musaceae, line 6, for =1. *read* =.

Myricaceae, for nut, *read* drupe or nut.

Myrmecophila Rolfe (*Schomburgkia* p.p.). Orchidaceae (II. 6). 7 C. and trop. S. Am.

Myzodendraceae, line 2, after very, *read* small.

Neomanniophyton Pax et K. Hoffm. Euphorbiaceae (A. II. 2). 12 W. Afr.

- Neotrewia** Pax et K. Hoffm. (*Mallotus* p.p.). Euphorbiaceae (A. II. 2).
1 Phil. Is.
- Necwollastonia** Wernham in Ridley. Apocynaceae (I. 3). 1 New Guinea.
- Nephelochloa** Boiss. Gramineae (10). 1 W. As.
- Nephradenia** Decne. in DC. Asclepiadaceae (II. 3). 5 Brazil to Mex.
- Notomia**, *read* Notomia.
- Nyctaginaceae**, *add* seed with perisperm.
- Nyssaceae**. After alt. exstip. *read* 1.
- Octoknemataceae** (*Olacaceae* p.p.). Dicots. (Santalales). Only genus Octoknema. Woody pl. with alt. l. and stellate hairs. Fls. ♂, P 2—3, A 2—3, anteposed, G 1-loc. with thread-like plac. pressed against the wall, and 3 pend. ov. Fr. drupaceous, 1-seeded.
- Oreophila** D. Don = Hypochoeris L. (Comp.).
- Oxycarpha** Blake. Compositae (5). 1 Venezuela.
- Pachystoma** (Klotzsch) Muell.-Arg., *read* Pachystroma.
- Palmervandenbroekia** L. S. Gibbs. Araliaceae (1). 1 N.W. Dutch New Guinea.
- Papuzilla** Ridley. Cruciferae (2). 1 New Guinea.
- Parasyringa** W. W. Smith (*Syringa* p.p.). Oleaceae. 1 Yunnan.
- Pentaphylax**. For caps. *read* Caps.
- Pentastira** Ridley. Icacinaceae. 2 New Guinea.
- Petalocaryum** Pierre ex A. Chevalier. Olacaceae. 1 Gaboon.
- Phaenoeuron**, *read* Phaeoneuron.
- Phalacroceris**, *read* Phalacroseris.
- Phyllomolia**, *read* Phyllomelia.
- Phyllitis**. Add Cf. Scolopendrium.
- Pierreodendron** A. Chevalier. Sapotaceae. 1 Gaboon.
- Plasolaena** Pierre ex A. Chevalier (*Schumannniophyton* Harms).
Rubiaceae (I. 8). 1 Congo.
- Platanus**, for G 4 or 3 *read* 1, 4, or 3.
- Pleurodiscus** Pierre ex A. Chevalier. Sapindaceae (1). 2 W. trop. Afr.
- Pocillaria** Ridley. Icacinaceae. 1 New Guinea.
- Poikilogyne** E. G. Baker in L. S. Gibbs. Melastomaceae (II). 1 N.W. Dutch New Guinea.
- Pontederiaceae**. For G *read* G.
- Postea**, *read* Postia.
- Proteaceae**. For G *read* G.
- Psychanthus** Ridley (*Alpinia* p.p.). Zingiberaceae (1). 6 New Guinea.
- Pyrogennema** Lunell (*Epilobium* p.p.). Onagraceae (2). 1 (*E. angustifolium* L.) N. temp.
- Pyrsonota** Ridley. Cunoniaceae. 1 New Guinea.
- Raritebe** Wernham. Rubiaceae (I. 8). 1 Colombia.
- Resinocaulon** Lunell (*Silphium* p.p.). Compositae (5). 1 E. U.S.
- Rhysolepis** Blake (*Viguiera* p.p.). Compositae (5). 2 Mexico.
- Riseleya** Hemsl. Euphorbiaceae (A. I. 1). 1 Seychelles.
- Ropoutea**, *read* Ropourea.
- Rcsa**. For (III. 10) *read* (III. 6).
- Rossittia** Ewart in Ewart et Davies. Rutaceae (I). 1 N. Austr.
- Sagentia** (after Sarga), *read* Sargentia.

Salacicrater, *read* Salacicratea.

Samanea Merrill (*Pithecolobium* p.p.). Leguminosae (I. 1). 1 S. Am.
(*P. Saman* Benth.).

Santalaceae. For L. opp. *read* opp. or alt.

Saugetia Hitchcock et Chase. Gramineae (11). 1 Cuba.

Scheuchzeriaceae. For 12 sp. *read* 15.

Schismocarpus Blake. Loasaceae. 1 Mexico.

Schizandria, *read* Schizandra.

Seed-dispersal, *see* Dispersal of Seeds.

Setosa Ewart in Ewart et Davies. Gramineae (3). 1 N. Austr.

Simarubaceae before § *read* rarely.

Simonenium Diels (*Cocculus* p.p.). Menisp. 1 E. As.

Spathia Ewart in Ewart et Davies. Gramineae (2). 1 N. Austr.

Sperauksia, *read* Speranskia, and 3 China.

Stemonaceae. For G *read* G.

Teruncius Lunell (*Thlaspi* p.p.). Cruciferae (2). 1 N. temp. 1*.

Tessmannia, *read* Tessmannia.

Thuranthos C. H. Wright. Liliaceae (v). 1 S. Afr.

Thylacophora Ridley. Zingiberaceae (1). 1 New Guinea.

Thyrsia Stapf. Gramineae (2). 4 trop. Afr., India.

Tiliaceae, *add* fr. usu. a caps. or schizocarp; endosp.

Trailliaedoxa W. W. Smith et Forrest. Rubiaceae (inc. sed.). 1 Yunnan.

Trifidacanthus Merrill. Leguminosae (III. 7). 1 Ph. Is.

Trillesianthus Pierre ex A. Chevalier. Tiliaceae. 1 Congo.

Trithrinax, *add* 3 (species).

Triuris Miers. Triuridaceae. 2 Brazil.

Trophisomia Roj. Moraceae (11). 1 Chaco (Argentina).

Turricula Macbride (*Nama* p.p.). Hydrophyllaceae. 1 California.

Usoricum Lunell (*Onagra* p.p.). Onagraceae (2). 1 N. Am.

Veconcibea Pax et H. Hoffm. (*Conceveiba* p.p.). Euphorbiaceae (A. II. 2). 2 Brazil.

Vesicarpa Rydberg (*Artemisia* p.p.). Compositae (7). 1 W. U.S.

Volkensinia Schinz (*Kentrosphaera* p.p.). Amarantaceae (2). 1 trop. Afr.

Wine-berry, *Rubus phoenicolasius* Maxim. (Japan).

Zingiber, *add* 55 Masc., trop. As.

16 Dec. 1918.

KEY
TO THE FAMILIES OF
FLOWERING PLANTS

BASED ON ENGLER'S CLASSIFICATION AS GIVEN
IN *DIE NATÜRLICHEN PFLANZENFAMILIEN*,
AND REVISED IN HIS *SYLLABUS*, ED. 7.

ii MONOCOTS. PANDANALES—TRIURIDALES

A; a; a; β

MONOCOTYLEDONEAE

[Embryo with one cot.; stem with closed bundles; l. usu. ||-veined; fl. usu. 3-merous.]

A. Orders with predominant variability in number of floral parts (Orders 1—7):

a. Typically achlamydeous fls. appear (Orders 1—4).

α . Fls. usu. naked. Great variability in number of sta. and cpls.

1. PANDANALES. Marsh herbs, or trees, with linear l., and cpd. heads or spikes of naked, haplo- or homo-chlamydeous σ φ fls. P bractlike, $A \infty - 1$, $G \infty - 1$. Endosp.

β . Naked fls. occur, but also all stages from achlam. to heterochlam. fls., and from hypog. to epig. Number of essential organs definite or not (Orders 2, 3).

2. HELOBIAE. Water or marsh pl. with scales in axils, and cyclic or hemicyclic fls. P in 0, 1, or 2 whorls, homo- or heterochlam., hypog. or epig. $A \infty - 1$, $G \infty - 1$, free or united. Endosp. little or none.

1. *Potamogetonineae*: fl. hypog., achlam., haplo-, or heterochlam. (fams. 1—4).

2. *Alismatineae*: fl. hypog., usu. heterochlam.; ov. on ventral suture (fam. 5).

3. *Butomineae*: fl. hypog. or epig., usu. heterochlam.; ov. on inner surface of cpls. (fams. 6, 7).

3. TRIURIDALES. Saprophytes with scale l. and small long-stalked homochlam. φ or σ φ fls. P 3—8, valv., petaloid; σ A 3, 4, or 6; φ , 2 stds. $G \infty$ each with 1 basal ov.; ∞ styles. Pericarp thick. Endosp.

MONOCOTYLEDONEAE

I

1. Typhaceae: rhiz. herbs with linear 2-ranked l. and cylindrical spikes of naked fls., ♀ below, ♂ above; A 2—5, G 1 on hairy axis with 1 pend. ov.; nutlet, with album. seed.
2. Pandanaceae: woody pl., sometimes climbing, with 3-ranked l. and term. or racemed spikes of ♂ ♀ fls., ♂ of ∞ sta. racemed or umbelled on short or long axis, ♀ of (∞—1) cpls. with sessile stigs. and ∞—1 ov.; heads of berries or drupes; endosp. oily.
3. Sparganiaceae: rhiz. herbs with 2-ranked l. and fls. in ♂ ♀ heads, ♀ heads lower. P 3—6, sepaloid, A 3—6, G (1—2), each with 1 pend. ov.; fr. drupaceous; endosp. floury.

2

1. Potamogetonaceae: submerged or floating herbs of fresh or salt water, with usu. 2-ranked l. and sol. or spiked ♂ or ♀ reg. fls. P usually 0, A 4—1, G 4—1 each with 1 pend. ov.; fr. 1-seeded.
2. Najadaceae: submerged herbs with opp. linear toothed l. and ♂ ♀ fls., ♂ P 2; A 1 term.; ♀ P 1 or 0, G 1, with 1 basal anatr. ov.
3. Aponogetonaceae: tuber-rhiz. water herbs with submerged or floating l. and spikes (in caducous spathes) of ♂ reg. fls. P 3—1 petaloid, A 3+3 or more, G 3—6; fr. leathery, seeds 2 or ∞.
4. Scheuchzeriaceae: marsh herbs with narrow l. and racemes or spikes of ♂ or ♂ ♀ reg. fls.; P usu. 3+3, homochlam., bractlike, A 3+3, G 3+3 sometimes united, outer often absent, 1 or 2 anatr. ov. in each. [*Lilaea* ♂ ♂ ♀, A 1, G 1.]
5. Alismaceae: water or marsh herbs with rad. l., latex, and much branched infl. of reg. heterochlam. ♂ or ♂ ♀ fls.; K 3, C 3, A 6—∞ or 3, G 6—∞ with 1—∞ anatr. ov. and 6—∞ styles; no endosp.
6. Butomaceae: water and marsh herbs; latex; usu. ± umbel-like cymose infl. of reg. usu. heterochlam. ♂ fls.; K 3, C 3, A 9—∞. G 6—∞, often united below, with ∞ ov. on inner surface; follicies.
7. Hydrocharitaceae: salt or fresh water pl. with alt. or whorled l. and sol. or cymose-paniculate fls. enclosed in 1 or 2 bracts, usu. heterochlam., reg., 3-merous, usu. ♂ ♀; A in 1—5 whorls, inner often stds., G (2—15), 1-loc. with parietal plac. and ∞ ov.; fr. irreg. dehisc. with ∞ seeds.

3

1. Triuridaceae.

iv *MONOCOTS. GLUMIFLORAE—FARINOSAE*

A; a; γ ; b; B; a

γ . Fls. usu. naked. Number of sta. rarely indefinite.

4. GLUMIFLORAE. Usu. herbs, with naked fls. (rarely with trichome-like or true P) covered by bracts (glumes). $\underline{G}$ 1-loc. with 1 ov.

b. Fls. rarely naked, and then usu. by reduction, and accompanied by spathes of bracts; A and G commonly definite, but also frequently ∞ sta. and > 3 cpls.

5. PRINCIPES. Tree-like or woody pl., sometimes climbing, with fan or feather l., and reg. usu. δ $\neq$ fls. in spikes (usu. compound) or spike-like racemes, usu. in spathe; P 3+3, A 3+3, or 3, 9, or ∞ , G 3 or (3), usu. with 1 ov. each; berry or drupe; endosp. rich.
6. SYNANTHAE. Often palm-like pl., climbers, or large herbs with δ $\neq$ fls. alternating over surface of spike, δ naked or with thick short P and 6— ∞ sta.; $\neq$ naked or with 4 fleshy scaly P and long thread-like std. in front of each, G (2) or (4) with 2 or 4 plac. and ∞ ov.; the 1-loc. ovaries sunk in spike and united; multiple fr. with ∞ seeds; endosp.
7. SPATHIFLORAE. Herbs, or woody, sometimes climbing, rarely forming erect stem, usu. sympodial; fls. cyclic, haplo- or homochlam. or naked by abortion, 3—2-merous, $\neq$ or δ $\neq$ often reduced to 1 sta. or cpl., in simple spikes (spadix), $\pm$ enclosed in bract (spathe).

B. Fls. typically 5-cyclic, whorls typically iso-, usu. 3-merous, rarely more or 2-merous (Orders 8—11).

a. Fls. homo- to hetero-chlam., rarely naked; P still often bract-like; hypogyny and actinomorphy the rule (Orders 8, 9).

8. FARINOSAE. Usu. herbs, rarely with stout stem; fls. cyclic, homo- or hetero-chlam, 3—2-merous, usu. P 3+3, A 3+3, G (3), one whorl of A sometimes wanting, or all reduced to 1; ov. usu. orthotr.; endosp. mealy.

1. *Flagellariineae*: P homochlam., bracteoid, hypog.; ov. anatr. (fam. 1).

• 2. *Enantioblastae*: P various, hypog.; ov. orthotr. (fams. 2—8).

4

1. Gramineae: herbs, rarely woody, with jointed stem and alt. 2-ranked l. with split sheath and ligule, and panicle or spike-like infls. of small ♀ rarely ♂ ♀ naked fls. in spikelets, each beginning with 1 or more empty glumes, then glumes with axillary fls.; A usu. 3, G with 1 ov., micropyle facing down; stigs. 2, 3, or 1; caryopsis with rich endosp.
2. Cyperaceae: herbs with usu. 3-angled stem and 3-ranked l. with closed sheath; fls. in spikelets or cymes united to large infls., naked, ♀ or ♂ ♀; A usu. 3—1, G (3—2), styles 3—2, 1-loc. with 1 basal anatr. ov.; nut; endosp.

5

1. Palmae.

6

1. Cyclanthaceae.

7

1. Araceae: tuberous herbs, sometimes woody, or lianes, with ♀ or ♂ ♀ fls. in same spike, often with spathe; fl. 2—3-merous or reduced to 1 sta. or cpl.; fr. usu. berry; outer seed-coat fleshy.
2. Lemnaceae: free swimming water pl. usu. with no l. and naked ♂ ♀ fls., ♂ of 1 sta., ♀ of 1 cpl. with 1—6 basal erect ov.; endosp. thin.

8

1. Flagellariaceae: pl. sometimes climbing, with long many-veined l. and small, ♀ or ♂ ♀, 3-merous, reg. fls. in cpd. term. panicles; P bractlike, G (3) 3-loc. each with 1 ov.; fr. 3-loc. or with 3—1 stones; endosp.
2. Restionaceae: rush-like xero. or marsh herbs with creeping rhiz. and 2-ranked bracts or scale l. on stem; fls. in spikes in axils of bracts, usu. ♂ ♀ reg.; P 3—2 + 3—2 sepaloid, A 3—2, G (3—1) with 3—1 styles, 3—1-loc. with 1 ov. in each; caps. or nut; endosp.
3. Centrolepidaceae: usu. marsh pl. with ♀ or ♂ ♀ fls., naked or with 1—3 hair-like br.; A 1—2, G (1—∞) each with 1 pend ov.

3. *Bromeliineae*: P usu. heterochlam., hypog. to epig.; ov. anatr. (fams. 7—9).
4. *Commelinineae*: P heterochlam.; part of A often stds. or wanting (fam. 10).
5. *Pontederiineae*: P homochlam., petaloid, united (fams. 11, 12).
6. *Philydrineae*: P petaloid, the outer l. larger than inner, the 2 post. of outer whorl united, the post. of inner whorl aborted (fam. 13).
9. *LILIIFLORAE*. As last, but endosp. fleshy or oily; ov. usu. anatr.; fls. usu. 3-merous, rarely 2, 4, or more.
 1. *Juncineae*: P homochlam., bracteoid; endosp. mealy with starch (fam. 1).
 2. *Liliineae*: P homochlam, rarely bracteoid, usu. petaloid, rarely heterochlam.; endosp. without starch; inner whorl of A present (fams. 2—8).

4. Mayacaceae: marsh pl. with alt. linear l. and sol. or umbelled ♀ reg. heterochlam. 3-merous fls.; K 3, C 3, A 3, G (3), style 1 with 3 stigs., 1-loc. with parietal plac. and few ov.: caps. 3-valved.
5. Xyridaceae: perenn. herbs with long narrow l. and axill. spikes of ♀ heterochlam. 3-merous fls.; K 1 with 2 smaller lat. l., C (3) with tube, A 3 epipet., with sometimes 3 outer stds., G (3), 1-loc. with ∞ ov.; caps. 3-valved; endosp.
6. Eriocaulaceae: perenn. herbs with long linear l. and involucrate heads of fls. on long stalks, ♂ ♀, reg. or 1, heterochlam., 2—3-merous, sta. usu. in 1 whorl, G (2—3), 2—3-loc. with 1 pend. ov. in each: caps.; endosp.
7. Thurniaceae: perenn. herbs with narrow l. and heads of ♀, reg. homochlam. 3-merous fls. on Δ stalks; P 3+3, A 6, G (3), 3-loc. with 1—∞ ov. in each; caps.; endosp.
8. Rapateaceae: perenn. herbs with 2-ranked narrow l.; infl. term. with 2 large spathes encl. head of spikelets, each of ∞ br. and term. ♀ reg. 3-merous heterochlam. fl.; K (3), C (3), A 3+3, G (3), 3-loc. with ∞—1 ov. in each; caps.; endosp.
9. Bromeliaceae: herbs, often epiph., with alt. usu. rad. l. and spikes or panicles of usu. ♀ reg. heterochlam. 3-merous fls.; K 3, C or (C) 3, A 3+3, G (3), sup. to inf., 3-loc. with ∞ ov.; berry or caps.; endosp.
10. Commelinaceae: herbs with jointed stems, alt. sheathing l. and cymes of blue or violet, ♀ reg. or 1 heterochlam. 3-merous fls.; K 3, C 3, rarely united, A 3+3, G (3—2), style 1, 3—2-loc. with few ov.; caps.; endosp.
11. Pontederiaceae: water pl. often with 2-ranked l. and spicate ♀ 1 fls.; P 3+3 with long tube, A 3+3, 3, or 1, on tube, G (3) with 1 style, 3-loc. with ∞ ov. or 1-loc. with 1; caps. or nut; endosp.
12. Cyanastraceae: herbs with tuber or rhiz. and raceme or panicle of ♀ reg. 3-merous fls.; (P) with short tube, A 6, G (3), with 1 style, 3-loc. with 2 ov. in each; caps. 1-seeded; perisp.
13. Philodraceae: herbs with 2-ranked narrow l. and spikes of homochlam. 3-merous ♀ 1 fls.; sta. 1 ant., G (3) with 1 style, 3- or 1-loc. with ∞ ov.; caps.; endosp.

9

1. Juncaceae: perenn. herbs with narrow usu. rad. l. and many-fl. infl. of homochlam. 3-merous ♀ reg. fls.; P sepaloid, A 6 or 3, G (3), style 1 with 3 stigs., 1—3-loc. each with 1—∞ ov.; caps.; endosp.
2. Stemonaceae: perenn. herbs with rhiz. and often climbing stem and axillary infls. of homochlam. ♀ reg. 2-merous fls.; P sepaloid, G (2), 1-loc.; caps.
3. Liliaceae: herbs with rhiz. or bulbs, shrubs, or trees with infl. of usu. racemose type, of usu. homochlam. ♀ reg. usu. 3-merous fls.; P or (P) 3+3, petaloid, A 3+3, G to G 3—(2—5)-loc.; fr. various; endosp. fleshy or cartilaginous.
4. Haemodoraceae: perenn. herbs with 2-ranked l. and simple or cpd. infl. of ♀ reg. or 1 fls.; P 3+3, A 3, G to G, 3-loc. with few ov.; caps.

3. *Iridineae*: as last, but inner sta. aborted (fam. 9).

b. *Fls. homo-(petaloid) or heterochlam., epig., usu. ♂ (Orders 10, 11).*

10. SCITAMINEAE. Trop. herbs, sometimes very large or woody, with cyclic, homo- or hetero-chlam. usu. ♂ 3-merous fls.; A typically 3 + 3, but often with great reduction, even to 1 sta., $\bar{G}$ usu. 3-loc. with large ov.; usu. aril, peri- and endosp.

11. MICROSPERMAE. Fls. cyclic, homo- or hetero-chlam., 3-merous, typically diplostemonous, but commonly with great reduction in A, G 3- or 1-loc. with ∞ small ov.; endosp. or o.

1. *Burmanniineae*: fls. usu. reg.; endosp.

2. *Gynandreae*: fls. always ♂; no endosp.

5. Amaryllidaceae: herbs or shrubs of various habit and cymose infl. on scape, of ♀ reg. or ♂ fls.; P 3+3 petaloid, A 3+3 usu. intr., often with stipular corona, $\bar{G}$ (3), rarely $\frac{1}{2}$ -inf., 3-loc. with ∞ ov.; caps. or berry.
6. Velloziaceae: herbs or shrubs with linear crowded l. and term. sol. ♀ reg. 3-merous fls. on long stalks; P petaloid, A 6 or 6 bundles, $\bar{G}$ (3), 3-loc. with ∞ ov. on lamellar plac.; caps.; endosp.
7. Taccaceae: perenn. herbs with tubers and large entire or cymosely branched l., and cymose umbels of ♀ reg. fls. with long thread-like br.; P 3+3, petaloid, A 3+3, $\bar{G}$ (3), 1-loc. with parietal plac., 6 petaloid stigs. and ∞ ov.; caps. or berry.
8. Dioscoreaceae: climbing herbs with usu. tuberous rhiz. and alt. or opp. often sagittate l.; fls. in racemes, homochlam., ♀ or ♂ ♀, reg.; P sepaloid, usu. united, with tube, A 3+3, inner sometimes stds., $\bar{G}$ (3), 3- or 1-loc., usu. with 2 ov. to each, styles 3 or 6; caps. or berry; endosp.
9. Iridaceae: perenn. herbs or undershrubs with equitant l. and term. cymose infl. of ♀ reg. or ♂ fls.; P 3+3 homo- or hetero-chlam., A 3 extr., $\bar{G}$ (3), 3-loc. with 3 styles sometimes divided and leafy, ov. ∞ , rarely 1-loc.; caps.; endosp.

IO

1. Musaceae: very large herbs with 'false' stem, or trees, with cpd. infl. with large often petaloid br. and ♀ or ♂ ♀, ♂ homo- or hetero-chlam. fls.; P 3+3, petaloid, often united, A 3+2 and std., $\bar{G}$ (3), 3-loc. with 1— ∞ ov. in each; berry or caps.; endosp. and perisp.
2. Zingiberaceae: perenn. herbs with tuberous rhiz. and lanc. petiolate l., with ligule and simple or cpd. infls. of usu. ♀ ♂ fls.; K (3), C (3) forming tube below, A 1 (of inner whorl, with labellum opp. to it of 2 inner stds., and sometimes 2 outer stds.) $\bar{G}$ (3), usu. 3-loc. with ∞ ov.; caps.; usu. aril; endosp. and perisp.
3. Cannaceae: perenn. herbs with large l. and cpd. infl. of showy heterochlam. ♀ asymmetric fls.; K 3, C (3), A 1—5, only half of 1 inner sta. fertile, the other half, and rest, petaloid stds., $\bar{G}$ (3), 3-loc. with ∞ ov.; caps.; endosp. and perisp.
4. Marantaceae: perenn. herbs with 2-ranked l. with pulvinus at end of stalk, and heterochlam. ♀ asymmetric fls.; P 3+3, A 4—5, only 1 inner half fertile, as in last, the 2 other inner and 1—2 outer petaloid (1 inner usu. hoodlike), $\bar{G}$ (3), 3-loc. or 1-loc. by suppression, with 1 ov. in each; aril; caps.; endosp. and perisp.

II

1. Burmanniaceae: green or saproph. herbs with sol. or cymose fls.; P (3+3) or 3+3, A 3+3 or 3, $\bar{G}$ (3), 3- or 1-loc.; caps., ∞ seeds; endosp.
2. Orchidaceae: perenn. herbs of various form, often epiph. with pseudobulbs, and ♀, ♂, usu. resupinated, homo- or hetero-chlam. fls.; P 3+3, A 1 or 2, united with style of $\bar{G}$ (3) 1-loc. to form a column; pollen in tetrads usu. united to pollinia, stigmas 3, the third usu. rudimentary or forming a rostellum, ovules ∞ ; caps.; no endosp.

DICOTYLEDONEAE

[Embryo with two cots.; stem with open bundles; l. usu. net-veined; fl. usu. not 3-merous.]

Archichlamydeae (Orders 1—30)

(Fl. achlam., haploclam., or diploclam., usu. polypet., rarely sympet. or apet.)

A. Ov. with 20 or more embryo sacs, and chalazogamic fert. (Order 1).

1. **VERTICILLATAE.** Woody pl. of Equisetum habit; ♂ fls. in catkin-like spikes, ♀ in heads, at end of twigs; ♂ with 2 median bractlike P and a central sta., ♀ naked, $\underline{G}$ (2) with 2 threadlike stigmas, 2-loc., the post. sterile, the other with 2—4 erect orthotr. ov.; fr. indeh.; no endosp.

B. Ov. usu. with only 1 embryo sac (Orders 2—30).

a. Fls. naked or with haploclam. bract-like P (Orders 2—12).

2. **PIPERALES.** L. simple, stip. or not, and spikes of small achlam. or haploclam. ♂ or ♂ ♀ fls.; A 1—10, $\underline{G}$ 1—4, free or united.

3. **SALICALES.** Woody with simple alt. stip. l. and spikes of dioec. achlam. fls., disc cup-like or reduced to scales; A 2—∞, $\underline{G}$ (2), 1-loc. with parietal plac. and ∞ anatr. ov.; caps. with ∞ seeds, seeds small with basal tuft of hairs and no endosp.

4. **GARRYALES.** Woody pl. with opp. evergr. l. and fls. in catkin-like panicles, ♂ ♀; ♂ P 4, A 4, ♀ naked, $\underline{G}$ (2—3), 1-loc. with 2 ov.; endosp.

5. **MYRICALES.** Woody, usu. with simple l. and fls. in simple, rarely cpd. spikes, ♂ ♀ achlam., sometimes with bracts at base; A 2—16, usu. 4, $\underline{G}$ (2), 1-loc. with 1 basal orthotr. ov. and 2 stigs.; porogamous; drupe with waxy exocarp; no endosp.

6. **BALANOPSIDALES.** Woody with simple l.; ♂ fls. in spikes, haploclam, ♀ sol. surrounded by ∞ scaly bracts; $\underline{G}$ (2), imperfectly 2-loc. each with 2 ascending ov.; drupe.

7. **LEITNERIALES.** Woody with alt. entire l. and spikes of dioec. fls.; ♂ achlam., A 3—12, ♀ haploclam., P of small scaly united l., $\underline{G}$ 1 with long style and 1 amphitr. ov.; drupe; thin endosp.

8. **JUGLANDALES.** Woody with alt. usu. pinnate exstip. l. and spikes of achlam. or haploclam. ♂ ♀ fls.; A 3—40, $\underline{G}$ (2), 1-loc. with 1 basal orthotr. ov.; chalazogamic; fr. drupe or nut-like; no endosp.

DICOTYLEDONEAE

Archichlamydeae

I

1. Casuarinaceae.

2

1. Saururaceae: herbs with alt. l. and spikes of achlam. ♀ fls.; A 6 or less, G (3—4) or 3—4, plac. parietal, ov. 2—∞; endo- and peri-sp.
2. Piperaceae: herbs and shrubs with alt. l. of biting taste, and spikes, &c. of ♀ or ♂ ♀ achlam. fls.; A 1—10, G (1—4), 1-loc. with 1 basal ov.; endo- and perisp.
3. Chloranthaceae: herbs or woody pl. with opp. stip. l. and spikes or cymes of ♀ or ♂ ♀ fls., sometimes with sepaloid P; A (1 or 3) united to ovary, G 1 with 1 pend. ov.; peri- and endosp.
4. Lacistemaceae: shrubs with 2-ranked lanc. exstip. l. and spikes of minute ♀ fls., naked or with sepaloid P; A 1, G (2—3) plac. parietal, with 1—2 pend. ov. on each; caps. 1-seeded; endosp.

3

1. Salicaceae:

4

1. Garryaceae:

5

1. Myricaceae:

6

1. Balanopsidaceae:

7

1. Leitneriaceae:

8

1. Juglandaceae:

9. BATIDALES. Coast shrub with opp. fleshy l. and panicles of spikes; fls. ♂ ♀, ♂ with cup-like P and A 4, ♀ naked, originally 2-loc. with 2 ov. in each, divided by false septum, all ♀ fls. in spike concrescent; aggregate fr.; no endosp.
10. JULIANIALES. Woody with alt. usu. pinnate exstip. l. and dioec. fls.; ♂ ∞ in ± dense panicle, P, A, 6—8, ♀ in fours at end of downward directed spike, naked, G 1-loc. with 1 ov. on broad hollowed funicle; no endosp.
11. FAGALES. Woody with alt. stip. l. and fls. in simple or cymose spikes, cyclic, homochlam., rarely naked, usu. monoec.; A opp. P, $\bar{G}$ (2—6) each with 1—2 ov.; fr. nut-like, seed 1; no endosp.

12. URTICALES. Herbs, shrubs, trees with alt. or opp. stip. l. and cymose infls. of cyclic homochlam. rarely haplochlam. or naked usu. reg. ♂ or ♂ ♀ fls., usu. 2 + 2 rarely 2 + 3-merous; sta. before P, $\bar{G}$ (2—1) with 1 ov.; drupe or nut.

b. *Usu. with sepaloid or petaloid P, rarely heterochlam. (Orders 13—16).*

13. PROTEALES. Woody with alt. exstip. l. and spikes or racemes of cyclic homo- (apparently haplo-)chlam. 2 + 2-merous ♂ or ♂ ♀ reg. or ± fls.; P petaloid; sta. anteposed and usu. adherent to P, $\bar{G}$ 1; fr. various, no endosp.
14. SANTALALES. Herbs, shrubs, trees, often paras., with cyclic, usu. homochlam. fls.; A anteposed, in 1 or 2 whorls, $\bar{G}$, rarely $\bar{G}$ (2—3), rarely 1, each with 1 pend. ov. (or ov. not differentiated).
 1. *Santalineae*: ov. differentiated from plac., often without integ. (fams. 1—6).

9

1. Batidaceae:

10

1. Julianiaceae:

11

1. Betulaceae: shrubs and trees with alt. simple l. with caducous stips. and monoec. anemoph. fls. in catkins, typically 3 fls. per axil; P sepaloid or 0, A 2—10, $\overline{G}$ (2), 2-loc. each with 1 pend. ov.; nut; no endosp.
2. Fagaceae: trees, rarely shrubs, with simple l. and caducous scaly stips., and usu. catkins or small spikes of ♂ ♀ fls.; P sepaloid (4—7), A 4—7 or 8—14, $\overline{G}$ usu. (3), 3-loc., 3-styled, each with 2 pend. ov.; nut; no endosp.

12

1. Ulmaceae: trees and shrubs with 2-ranked simple stip. l. and axill. cymes of homochlam. ♂ or ♂ ♀ fls.; P 4—5, sepaloid, A (4—5) or (8—10), $\overline{G}$ (2), styles 2, usu. 1-loc. with 1 pend. ov.; nut or drupe; usu. no endosp.
2. Moraceae: usu. trees and shrubs with stip. l., latex, and cymes of small ♂ ♀ fls., often head-like; P usu. 4 or (4), persistent, rarely 0, A as many, opp. P, $\overline{G}$ (2), 1-loc. with usu. 1 pend. ov.; nut or drupe; endosp. or not.
3. Urticaceae: usu. herbs with opp. or alt. stip. l., no latex, and cymose infls. of small homochlam. usu. ♂ ♀ fls.; P usu. 4—5, A 4—5 opp. P, bent inwards in bud and exploding, $\overline{G}$ 1-loc. with 1 basal ov. and 1 style; nut or drupe; endosp.

13

1. Proteaceae:

14

1. Myzodendraceae: semiparas. undershrubs with alt. l. and minute naked ♂ ♀ fls.; A 2—3—1 with monothecous anthers, $\overline{G}$ (3) with axile plac. and 3 ov.; fr. with 3 feathery bristles in angles.
2. Santalaceae: semiparas. herbs, shrubs, trees with opp. or alt. l. and small ♂ or ♂ ♀ homochlam. fls. with perig. or epig. disc; P usu. 2+2 or 2+3, A as many, inserted on P, $\overline{G}$ 1-loc. with axile plac. and 1—3 ov.; nut or drupe, 1-seeded; endosp.

2. *Loranthineae*: ov. usu. not differentiated (fam. 7).

3. *Balanophorineae*: plac. central with pend. ov. with no integ.; chlorophyll-less paras. (fam. 8).

15. *ARISTOLOCHIALES*. Fls. cyclic, homo- or haplo-chlam, reg. or $\cdot$; P petaloid, G usu. inf. 3—6-loc. with axile plac., or 1-loc. with parietal, and ∞ ov.

16. *POLYGONALES*. L. usu. ochreate, fls. haplo- to hetero-chlam., $\frac{8}{4}$ reg.; $\underline{G}$ 1-loc. with usu. 1 basal erect ov.; nut; endosp.

c. *P haplochlam.*, *sepaloid or petaloid, sometimes heterochlam.* (Order 17).

17. *CENTROSPERMAE*. Usu. herbs with spiral or cyclic homo- or hetero-chlam. fls.; A usu. = and opp. P, but also $\infty-1$, $\underline{G}$ ($\infty-1$) of free, rarely $\bar{G}$, usu. 1-loc. with $\infty-1$ campylotr. ov.; perisperm.

1. *Chenopodiineae*: P bracteoid, not > 5 , A anteposed; ovule usu. 1 (fams. 1, 2).

3. Opiliaceae: fls. ♂ heterochlam. with slight seam-like K; $\bar{G}$ with 1 ov. with no integument.
4. Grubbiaceae: trees or shrubs with opp. leathery l. and small ♂ reg. fls.; P 4 sepaloid, A 4+4, $\bar{G}$ (2), 2—5-loc. below when young, later 1-loc. with 2 pend ov. on central plac.; drupe; oily endosp.
5. Olacaceae: trees and shrubs with usu. alt. entire l. and small ♂ reg. fls.; K 4—6, very small, C 4—6, A as many or 2—3 times as many, $\bar{G}$ (2—5), 2—5-loc. at base, 1-loc. above, with 1 ov. pend. into each loc.; 1-seeded drupe or nut; endosp.
6. Octoknemataceae: woody with alt. l. and ♂ fls.; P 2+3, A 2+3, anteposed, $\bar{G}$ 1-loc. with 3 pend. ov.; drupe 1-seeded.
7. Loranthaceae: woody semiparas., usu. on trees, with usu. reg. 2—3-merous, usu. homochlam. ♂ or ♂ ♀ fls.; P in two whorls, A as many, $\bar{G}$ 1-loc. usu. without differentiation of ov. and plac.; layer of viscin round seed; endosp.
8. Balanophoraceae: fleshy root paras. with tuberous rhiz. from which stems rise endog., and small fls. in spikes or heads, homochlam. or naked, usu. ♂ ♀; P in ♂ 3—4 (2—8), united below, A as many or 1—2; P in ♀ usu. 0; $\bar{G}$ (1—2), rarely (3—5); nut or drupe; endosp.

15

1. Aristolochiaceae: herbs or climbing shrubs with alt. exstip. l. and homochlam. ♂ reg. or ♀ fls.; P usu. (3), petaloid, A 6—36, free or united with style, $\bar{G}$, rarely $\underline{G}$, 4—6-loc. with ∞ ov.; caps.; endosp.
2. Rafflesiaceae: thalloid parasites, shoots very short with term. fl. or raceme, usu. ♂ ♀, reg. haploclam.; P (4—5), A ∞ on column, $\bar{G}$ (4—6—8) with parietal plac. or ∞ twisted loc.; berry with ∞ seeds; endosp.
3. Hydnoraceae: thalloid paras. with ♂ reg. fls.; P (3—4), fleshy, A 3—4, epiphyllous, $\bar{G}$ (3) with parietal plac. and ∞ ov.; berry; endo- and perisp.

16

1. Polygonaceae:

17

1. Chenopodiaceae: usu. herbs with alt. often fleshy l. and cymose infis. of small reg. homochlam. ♂ or ♂ ♀ fls.; P (5) or less, imbr. sepaloid, A as many, anteposed, bent inwards in bud, $\bar{G}$ (2) 1-loc. with 1 basal ov.; nut; endosp.
2. Amarantaceae: herbs or shrubs with opp. or alt. exstip. l. and small haploclam. usu. ♂ reg. fls. in cymose or cpd. infis.; P 4—5 or (4—5) usu. sepaloid, A 1—5 anteposed and $\pm$ united below, $\bar{G}$ (2—3), 1-loc. with ∞ —1 ov.; nut; endosp.

B; c; d; a

2. *Phytolaccineae*: P haplo- to hetero-chlam., tending to cyclic; A sometimes ∞ , G sometimes little united (fams. 3—6).

3. *Portulacineae*: P heterochlam.; K 2, C 4—5 (fams. 7, 8).

4. *Caryophyllineae*: P heterochlam., K=C; fl. cyclic, sometimes with no C (fam. 9).

d. *Fls. usu. heterochlam. (Orders 18—30).*

a. Apocarpy and hypogyny the rule; perig. and epig. fls. only in Lauraceae and Hernandiaceae (Order 18).

18. RANALES. Herbs or woody pl. with spiral, spirocyclic, or cyclic, usu. haplo- or hetero-chlam. rarely achlam. reg. or $\cdot$ fls.; A usu. ∞ , G ∞ —1, rarely united.

1. *Nymphaeaceae*: fls. various, usu. spiral; ov. (exc. in 2) usu. ∞ on inner surface of cpls.; mostly water plants (fams. 1, 2).

2. *Trochodendrineae*: fls. naked, spirocyclic; ov. on ventral suture; no oil cells (fams. 3, 4).

3. *Ranunculineae*: fls. with P, spiral to cyclic; ov. on ventral suture; no oil cells (fams. 5—8).

3. Nyctaginaceae: herbs or woody, with opp. exstip. l. and cymose
 $\varnothing$ or σ $\varnothing$ reg. fls. with bracts, sometimes united or petaloid, at
 base; P (5) petaloid, lower part persistent on fr.; A typically 5
 (1—30), $\underline{G}$ 1 with 1 basal erect ov.; achene; perisp.
4. Cynocrambaceae: herbs with fleshy stip. l., the lower opp., and
 σ $\varnothing$ fls., σ P 2—5, A 10—30, $\varnothing$ P (3—4), $\underline{G}$ 1, 1 ov.; drupe; endosp.
5. Phytolaccaceae: herbs or woody, with racemes or cymes of reg. usu.
 $\varnothing$ fls.; P usu. 4—5, A 4—5 or ∞ , $\underline{G}$ (rarely $\bar{G}$) 1— ∞ , free or
 united, 1 ov. in each; drupe or nut, rarely caps.; perisp.
6. Aizoaceae: herbs or undershrubs with threadlike or fleshy opp. or
 alt. exstip. l. and cymose infls. of $\varnothing$ reg. fls.; P 4—5 or (4—5),
 A 5 (3— ∞), the outer petaloid stds., $\underline{G}$ or $\bar{G}$ (2— ∞) with ∞ ov.,
 usu. 2— ∞ -loc.; caps.; perisp.
7. Portulacaceae: herbs or undershrubs with fleshy l. and often hair-
 like stips., and cymes of reg. $\varnothing$ fls.; K usu. 2, C 4—5, A 5 or
 5+5, or fewer or ∞ , $\underline{G}$ or semi-inf. (3—5) 1-loc. with 2— ∞ ov.
 on basal plac.; caps.; endosp.
8. Basellaceae: twining herbs with $\varnothing$ reg. fls.; K 2, C 5 united below,
 A 5 anteposed, $\underline{G}$ (3), 1-loc. with 1 basal ov.; nut; endosp.
9. Caryophyllaceae: herbs or undershrubs with entire usu. opp. l. and
 cymose panicles of usu. reg. $\varnothing$ fls.; K 5 or (5), C 5 or 0, A 5 or
 10, $\underline{G}$ (5—2), 1-loc. usu. with free-central plac., ov. 1— ∞ ; caps.
 or berry; endosp.

18

1. ✓ Nymphaeaceae: water or marsh pl. with usu. submerged or swim-
 ming l. and sol. reg. $\varnothing$ fls.; axis often hollowed; P 6— ∞ , A 6—
 ∞ , $\underline{G}$ or $\bar{G}$ 3— ∞ or (3— ∞), each with 1— ∞ ov.; endosp. or 0.
2. Ceratophyllaceae: submerged water pl. with whorls of 4 l. and sol.
 σ $\varnothing$ axillary reg. fls.; P 9—12 sepaloid, A 12—16, $\underline{G}$ 1 with
 1 pend. ov.; nut; endosp.
3. Trochodendraceae: woody with alt. exstip. l. and sol. or racemed
 naked $\varnothing$ or σ $\varnothing$ fls.; A ∞ , $\underline{G}$ 5— ∞ with ∞ —1 ov.; endosp.
4. Cercidiphyllaceae: woody with opp. stip. l. and sol. dioec. fls.;
 A ∞ spiral, $\underline{G}$ 2—5, stalked, with ∞ ov.; follicles; endosp.
5. Ranunculaceae: usu. herbs, often with divided l. and usu. $\varnothing$ reg.
 rarely $\cdot$ or fully cyclic fls.; P often haploclham., usu. petaloid,
 rarely K, C, A usu. ∞ , $\underline{G}$ ∞ —1 rarely united, with ∞ —1 ov.;
 follicle or caps., rarely berry; endosp. oily.
6. Lardizabalaceae: climbing shrubs with cpd. l. and sol. or racemed
 $\varnothing$ or σ $\varnothing$ reg. fls.; P 3+3 usu. with two whorls of honey-l.,
 A 3+3, $\underline{G}$ 3 or more with ∞ ov.; berry; endosp.
7. Berberidaceae: herbs or shrubs with simple or cpd. l. and $\varnothing$ reg.
 homo- or hetero-chlam. 3—2-merous fls.; P in 2—4 whorls, often
 with 2 whorls of honey-l., A in two, $\underline{G}$ 1, rarely more, with
 ∞ —1 ov.; berry; endosp.

4. *Magnoliineae*: fls. with P, spiral to cyclic; ov. on ventral suture; oil cells (fams. 9—18).

β . Syncarpy and hypogyny the rule (Orders 19, 20).

19. RHOEADALES. Usu. herbs with racemes of fls., cyclic (exc. sometimes the A), heterochlam., rarely homochlam. or apetal., hypog., reg. or $\dagger$; G (∞ —2), ov. with 2 integ.
 1. *Rhocadineae*: fl. heterochlam., K usu. 2 (fam. 1).
 2. *Capparidineae*: fls. heterochlam., K usu. 4 or more (fams. 2—4).

3. *Resedineae*: fls. heterochlam., spirocyclic (fam. 5).

8. Menispermaceae: climbing shrubs with usu. alt. simple l. and small usu. reg. ♂ ♀ fls.; K, C, A usu. each 2 whorls, $\underline{G} \infty - 3 - 1$ each with 1 ov.; drupe; endosp. or o.
9. Magnoliaceae: woody pl. with alt. simple l. and usu. sol. reg. heterochlam. ♂ or ♂ ♀ fls.; P usu. petaloid; A ∞ ; $\underline{G}$ usu. ∞ , rarely united; endosp.
10. Calycanthaceae: shrubs with opp. simple l. and ♂ fls. with hollowed recept.; P ∞ , petaloid, A 10—30, $\underline{G} \infty$ each with 2 ov.; achenes enclosed in axis; endosp. little.
11. Lactoridaceae: shrub with haplochlam. cyclic fls.; P 3, A 3+3, $\underline{G} 3$.
12. Anonaceae: woody pl. with entire exstip. l. and showy usu. ♂ reg. heterochlam. fls.; P 3+3+3, A ∞ spiral, $G \infty - 1$; berry; endosp. ruminant.
13. Eupomatiaceae: fl. deeply perig., naked; A ∞ , $G \infty$.
14. Myristicaceae: woody pl. with evergr. simple l. and axill. racemes of ♂ ♀ reg. cyclic fls.; P (3), A (3—18) extr., $\underline{G} 1$ with 1 basal ov.; fr. fleshy dehisc.; aril; endosp. ruminant.
15. Gomortegaceae: shrub with opp. evergr. l. and racemes of ♂ fls.; P 7, A 2—3, $G (2-3)$, with 1 pend. ov. in each; drupe; endosp.
16. Monimiaceae: woody pl. with usu. opp. exstip. l. and sol. or cymose infls. of ♂ or ♂ ♀ reg. or $\cdot$ fls.; P often perig. or epig., 4— ∞ or o, A ∞ or few, $\underline{G} \infty$ each with 1 ov.; achene; endosp.
17. Lauraceae: woody with leathery alt. exstip. l., and oil cavities in tissues; infl. various, of 3-merous reg. ♂ or ♂ ♀ fls. with $\pm$ concave axis; P homochlam. in 2 whorls, A in 3 or 4, one sometimes stds., anthers opening by valves, $\underline{G} (3)$, 1-loc. with 1 pend. ov.; berry usu. enclosed in fleshy axis; no endosp.
18. Hernandiaceae: woody with alt. exstip. l., and oil passages; and ♂ or ♂ ♀ reg. homochlam. fls.; P 4—10, A in whorl before outer P, $\underline{G} 1$ -loc. with 1 pend. anat. ov.; fr. winged; no endosp.

19

1. Papaveraceae: usu. herbs with alt. l. and latex, and reg. or $\cdot$ ♂ fls.; K 2, C 4, rarely 6 or more, or o, A $\infty - 4 - 2$ (branched), $\underline{G} (2-16)$ with parietal plac. and ∞ ov., or 1 basal; caps.; oily endosp.
2. Capparidaceae: herbs and shrubs with alt. l. and racemes (with br.) of ♂ reg. or $\cdot$ fls., axis usu. elongated below A or G; K, C 4, A $\infty - 6 - 4$, $\underline{G} (2-several)$, 1-loc. or more with ∞ ov.; caps., berry or drupe; no endosp.
3. Cruciferae: herbs with alt. exstip. l. and simple or branched hairs, and racemes (without br.) of ♂ reg. fls.; K 2+2, C 4 diagonal, A 2 (short) + 2+2 (long), $\underline{G} (2)$, 1-loc. with "spurious" partition; usu. siliqua; no endosp.
4. Tovariaceae: herbs with ternate l. and term. racemes of ♂ reg. fls.; K, C, A 8, $\underline{G} (6-8)$ with plac. reaching centre, and ∞ ov.; berry; endosp. thin.
5. Resedaceae: herbs with alt. stip. l. and racemes of ♂ $\cdot$ fls., with post. disc; K 4—8, C o—8, A 3—10, $\underline{G} (2-6)$ open above, 1-loc. with 1— ∞ ov.; caps.; no endosp.

B; d; β ; γ 4. *Moringineae*: fls. homochlam, cyclic (fam. 6).

20. SARRACENIALES. Herbs with usu. alt. insectivorous l. and spirocyclic to cyclic homo- or hetero-chlam. hypog. reg. fls.; $\underline{G}$ (3—5) with parietal or axile plac. and 3— ∞ ov.; endosp.

γ . Apocarpy and hypogyny occur, but perigyny is commoner; syncarpy and epigyny also common (Order 21).

21. ROSALES. Fl. cyclic, rarely spirocyclic, heterochlam. rarely apet., hypog. to epig., reg. or $\ddagger$; G or (G) sometimes with thick plac. and ∞ ov.

1. *Podostemonineae*: submerged trop. water pl. of alga or lichen-like form (fams. 1—3).

2. *Saxifragineae*: G=or fewer than C; endosp. usu. rich (fams. 4—13).

6. Moringaceae: trees with pinnate exstip. l. and panicles of ♂ ♀ fls.; K, C, A 5, and 5 stds., G (3) on short gynophore, with parietal plac. and ∞ ov.; caps.; no endosp.

20

1. Sarraceniaceae: herbs with pitcher l. and scapes with sol. or racemed ♂ reg. fls.; K 8—5, C 5, A ∞, G (5—3) 5 or 3-loc. with ∞ ov.; caps.; endosp.
2. Nepenthaceae: climbers with alt. l., the lower with pitchers, the upper tendrilled, and racemes or panicles of ♂ ♀ reg. fls., P 2+2 homochlam., A (4—16), G (4), 4-loc. with ∞ ov.; caps.; endosp.
3. Droseraceae: herbs usu. with alt. l., usu. rolled in in bud, and with sticky glands, and cymose ♂ reg. fls.; K, C 5—4, A 5—4—20, G (5—3), 1-loc. with ∞—3 ov.; caps.; endosp.

21

1. Podostemaceae: herbs (usu. trop.) of rushing water with reg. or ♂ ♀ achlam. fls.; A ∞—1 free or united, G (2), 2—1-loc. with thick central plac. and ∞ or few anatr. ov.; caps.
2. Tristichaceae: as last, with reg. or slightly ♂ homochlam. ♂ fls.; P 3—5 sepaloid, A as many, or 4—5 times as many, or 2—1, G (2—3), 2—3-loc. with ∞ ov. on thick central plac.; caps.
3. Hydrostachyaceae: herbs (S. Afr.) of running water with spikes of dioec. naked fls.; ♂ of 1 sta., ♀ of (2) cpls. with ∞ ov.; caps.
4. Crassulaceae: succulent exstip. herbs or undershrubs, usu. with cymose infl. of reg. ♂ 3—30-merous fls.; C or (C), A obdipl. or in one whorl, G sometimes slightly united, with ∞ ov.; follicles; endosp.
5. Cephalotaceae: perenn. herbs with some pitcher l. and panicles of ♂ reg. fls.; P 6, A 6, G 6 with 1—2 basal ov.; follicles; endosp.
6. Saxifragaceae: herbs, shrubs or trees with usu. alt. l. and various infl. of usu. ∞ ♂ reg. (rarely ♂) fls. with convex, flat or concave axis; A usu. obdipl. or =C, G=C or less, with usu. free styles, 2—1-loc. (rarely 5) with swollen plac. and ∞ ov. in several ranks, sup. or inf.; caps. or berry; endosp.
7. Pittosporaceae: woody, sometimes climbing, with alt. l. and resin passages, and ♂ reg. 5-merous fls.; G (2 or more) 1—5-loc. with parietal or axile plac. and 2-ranked ∞ anatr. ov., and simple style; caps. or berry; endosp.
8. Brunelliaceae: woody with opp. or whorled l. and panicles of small ♂ ♀ 4—5—7-merous diplost. fls.; K. valv., C 0, G 5—2 each with 2 pend. ov.; follicle-caps.; endosp.
9. Cunoniaceae: woody with opp. or whorled stip. l.; like 6, but ov. in 2 ranks.
10. Myrothamnaceae: small shrubs with opp. fan-folded l. and spikes of ♂ ♀ reg. achlam. fls.; A 4—8, G (4—3); caps. septicidal; endosp.

3. *Rosineae*: $G \infty - 1$; ov. with 2 integ.; endosp. little or o (fams. 14—18).

8. Fls. usu. with 5 or 4 whorls; apocarpy and isomery appear, but syncarpy and oligomery of $\underline{G}$ are the rule (Orders 22—26).

22. PANDALES. Fls. cyclic, heterochlam., dioec. $\underline{G}$ (3), each with 1 pend. orthotr. ov.; drupe.

23. GERANIALES. Fls. cyclic, heterochlam., apet. or naked, usu. 5-merous; A various, $\underline{G}$ (5—2), rarely more, often separating when ripe, usu. with 2—1 rarely ∞ ov., pend. with ventral raphe and micropyle up, or when > 1 present, some with dorsal raphe and micropyle down.

1. *Geraniineae*: fls. heterochlam. rarely apet., usu. reg. and obdipl., rarely haplostemonous and in $\cdot$ fls. usu. abortion of some sta.; anthers opening longitud., G iso- or oligo-merous; ov. with 2 integ. (fams. 1—12).

A. No secretory cells or passages (fams. 1—7).

11. *Bruniaceae*: heath-like undershrubs with alt. exstip. l. and cpd. spikes, racemes and heads of usu. reg. and perig. $\varnothing$ fls.; K, C, A 5, $\underline{G}$ (3—2) each with 3—4 ov. or 1 with 1; caps.; aril; endosp.
12. *Hamamelidaceae*: woody with usu. alt. stip. l. and spikes or heads of $\varnothing$ or σ φ reg., heterochlam. ap. or naked fls. surrounded by br.; K, C, A 4—5, $\underline{G}$ (2) with 1— ∞ pend. ov.; caps.; endosp.
13. *Eucommiaceae*: trees with alt. extip. l. and latex, and naked σ φ reg. fls.; A 6—10, $\underline{G}$ (2), one aborting, with 2 pend. ov.; samara; endosp.
14. *Platanaceae*: woody with alt. 3—5-lobed stip. l. and pend. spherical heads of σ φ reg. fls.; K, C, A 3—8, $\underline{G}$ usu. 1, free, with 1—2 ov.; caryopsis; endosp.
15. *Crossosomataceae*: shrubs with small stiff grey-green l. and sol. fls.; like *Rosaceae-Spiraeoideae*, but seeds kidney-shaped; aril; endosp.
16. *Rosaceae*: herbs, shrubs, or trees with usu. alt. stip. l. and reg. (rarely $\cdot$) 5 (3—8 or more)-merous fls.; axis flat or hollowed; K 5, C 5 or 0, A 2—4 or more times as many, bent inwards in bud, $G=K$ or 2—3 times as many, or ∞ , rarely 1—4, free or united to hollow axis, usu. 1-loc. with 2 ov. per cpl.; follicle, achene, drupe or pome; endosp. thin or 0.
17. *Connaraceae*: usu. climbing shrubs, rarely trees, with alt. exstip. l. and panicles of reg. $\varnothing$ or σ φ fls.; K 5 or (5) persistent, C 5, A 5+5, $\underline{G}$ usu. 5, rarely 4 or 1, each with 2 ov.; one follicle with 1 seed; aril; endosp. or none.
18. *Leguminosae*: trees, shrubs, or herbs, usu. with alt. stip. l. and racemes of reg. or $\cdot$ usu. $\varnothing$ fls.; K, C 5, A 5+5 or more, G usu. 1, rarely 2—5—15, with ∞ ov.; pod or indeh. fr.; endosp. usu. none.

22

1. *Pandaceae*.

23

1. *Geraniaceae*: herbs with lobed or divided l., stip. or not, and $\varnothing$ usu. reg. 5-merous fls.; A 10—15, sometimes only 5 fertile, $\underline{G}$ (5—2) usu. with 1—2, rarely 2— ∞ ov. per cpl.; schizocarp, rarely caps.; endosp.
2. *Oxalidaceae*: usu. herbs with alt. cpd. stip. or exstip. l. and $\varnothing$ reg. 5-merous fls. with no disc; A 10 obdiplost., united at base, $\underline{G}$ (5) with ∞ —1 ov.; caps. or berry; endosp.

3. *Rosineae*: $G \infty - 1$; ov. with 2 integ.; endosp. little or o (fams. 14—18).

8. Fls. usu. with 5 or 4 whorls; apocarpy and isomery appear, but syncarpy and oligomery of $\underline{G}$ are the rule (Orders 22—26).

22. PANDALES. Fls. cyclic, heterochlam., dioec. $\underline{G}$ (3), each with 1 pend. orthotr. ov.; drupe.
23. GERANIALES. Fls. cyclic, heterochlam., apet. or naked, usu. 5-merous; A various, $\underline{G}$ (5—2), rarely more, often separating when ripe, usu. with 2—1 rarely ∞ ov., pend. with ventral raphe and micropyle up, or when > 1 present, some with dorsal raphe and micropyle down.
1. *Geraniineae*: fls. heterochlam. rarely apet., usu. reg. and obdipl., rarely haplostemonous and in $\cdot$ fls. usu. abortion of some sta.; anthers opening longitud., G iso- or oligo-merous; ov. with 2 integ. (fams. 1—12).
- A. No secretory cells or passages (fams. 1—7).

11. *Bruniaceae*: heath-like undershrubs with alt. exstip. l. and cpd. spikes, racemes and heads of usu. reg. and perig. ♂ fls.; K, C, A 5, $\underline{G}$ (3—2) each with 3—4 ov. or 1 with 1; caps.; aril; endosp.
12. *Hamamelidaceae*: woody with usu. alt. stip. l. and spikes or heads of ♂ or ♂ ♀ reg., heterochlam. apert. or naked fls. surrounded by br.; K, C, A 4—5, $\underline{G}$ (2) with 1—∞ pend. ov.; caps.; endosp.
13. *Eucommiaceae*: trees with alt. extip. l. and latex, and naked ♂ ♀ reg. fls.; A 6—10, $\underline{G}$ (2), one aborting, with 2 pend. ov.; samara; endosp.
14. *Platanaceae*: woody with alt. 3—5-lobed stip. l. and pend. spherical heads of ♂ ♀ reg. fls.; K, C, A 3—8, $\underline{G}$ usu. 1, free, with 1—2 ov.; caryopsis; endosp.
15. *Crossosomataceae*: shrubs with small stiff grey-green l. and sol. fls.; like *Rosaceae-Spiraeoideae*, but seeds kidney-shaped; aril; endosp.
16. *Rosaceae*: herbs, shrubs, or trees with usu. alt. stip. l. and reg. (rarely ♂) 5 (3—8 or more)-merous fls.; axis flat or hollowed; K 5, C 5 or 0, A 2—4 or more times as many, bent inwards in bud, G = K or 2—3 times as many, or ∞, rarely 1—4, free or united to hollow axis, usu. 1-loc. with 2 ov. per cpl.; follicle, achene, drupe or pome; endosp. thin or 0.
17. *Connaraceae*: usu. climbing shrubs, rarely trees, with alt. exstip. l. and panicles of reg. ♂ or ♂ ♀ fls.; K 5 or (5) persistent, C 5, A 5 + 5, $\underline{G}$ usu. 5, rarely 4 or 1, each with 2 ov.; one follicle with 1 seed; aril; endosp. or none.
18. *Leguminosae*: trees, shrubs, or herbs, usu. with alt. stip. l. and racemes of reg. or ♂ usu. ♂ fls.; K, C 5, A 5 + 5 or more, G usu. 1, rarely 2—5—15, with ∞ ov.; pod or indeh. fr.; endosp. usu. none.

22

1. *Pandaceae*.

23

1. *Geraniaceae*: herbs with lobed or divided l., stip. or not, and ♂ usu. reg. 5-merous fls.; A 10—15, sometimes only 5 fertile, $\underline{G}$ (5—2) usu. with 1—2, rarely 2—∞ ov. per cpl.; schizocarp, rarely caps.; endosp.
2. *Oxalidaceae*: usu. herbs with alt. cpd. stip. or exstip. l. and ♂ reg. 5-merous fls. with no disc; A 10 obdiplost., united at base, $\underline{G}$ (5) with ∞—1 ov.; caps. or berry; endosp.

B. Secretory cells or passages (in 10 sometimes only in pith and bark) (fams. 8—12).

2. *Malpighiineae*: as last, but fls. obliquely $\perp$, at least in G;
1. often opp. (fams. 13—15).

3. Tropaeolaceae: usu. climbers with sensitive petiole, stip. or not, and ♂ 5-merous $\perp$ fls., with axis prolonged into post. spur; $\underline{A}$ 8, $\underline{G}$ 3-loc. with 1 ov. in each; schizocarp; no endosp.
4. Linaceae: herbs or woody with alt. l., stip. or not, and ♂ reg. 5-4-merous fls. with no disc; $\underline{A}$ 5-20 united below, $\underline{G}$ 5-4 (or less)-loc. with 1-2 ov. in each and often with extra partitions; caps. or drupe; endosp.
5. Humiriaceae: woody with alt. stip. l. and reg. ♂ 5-merous fls. with cup-shaped disc; $\underline{A}$ 10- ∞ , $\underline{G}$ (5) each with 1-2 ov.; drupe; endosp.
6. Erythroxylaceae: woody with alt. simple stip. l. and 5-merous ♂ reg. fls., heterostyled with no disc; $\underline{C}$ with appendages on inner side, $\underline{A}$ 10, united in tube at base, $\underline{G}$ (3-4), 3-4-loc, but only 1 fertile, with 1-2 ov.; drupe; endosp.
7. Zygophyllaceae: usu. shrubby with opp. often pinnate stip. l. and cymes or cpd. infls. of reg. ♂ 5-4-merous fls. with disc or gynophore; $\underline{A}$ 10-8, rarely 15, often with united basal appendages, $\underline{G}$ (5-4) or more with 1- ∞ ov.; usu. caps. or schizocarp; endosp. or o.
8. Cneoraceae: shrubs with alt. narrow leathery exstip. l., oil cells, and single or cymose reg. ♂ 3-4-merous fls. with disc; $\underline{A}$ 3-4, $\underline{G}$ (3-4), lobed, each with 2 ov.; style 1; schizocarp.
9. Rutaceae: usu. woody with alt. or opp. simple or cpd. exstip. l. and reg. or $\perp$ usu. ♂ 5-4-merous fls. with disc; $\underline{A}$ obdipl. or 5-4-3-2, rarely ∞ , $\underline{G}$ (5-4) rarely (3-1 or ∞) with ∞ -2 ov.; fr. various; endosp. or none.
10. Simarubaceae: woody pl. with bitter bark, alt. or opp. usu. pinnate exstip. l. and reg. usu. ♂ ♀ 5-4-merous fls. with disc; $\underline{A}$ 10, 5, or ∞ , $\underline{G}$ (5) or less; fr. various; endosp. thin or none.
11. Burseraceae: woody pl. with alt. usu. cpd. l., resin-passages and small reg. usu. ♂ ♀ 5-4-merous fls. with disc; $\underline{A}$ obdipl. or 5, $\underline{G}$ (5-3) each usu. with 2 ov.; style 1; drupe or caps.; no endosp.
12. Meliaceae: woody pl. usu. with pinnate exstip. l. and usu. ♂ reg. fls. in cymose panicles; axis rounded or with effigurations; $\underline{K}$, $\underline{C}$ sometimes united, $\underline{A}$ usu. in tube, obdipl. or 5, $\underline{G}$ (5) or less, multi-loc. with 1-2 rarely more ov. in each, and 1 style; fr. various; endosp. or o.
13. Malpighiaceae: woody usu. climbing pl. with opp. stip. l. and ♂ obdipl. 5-merous fls. with convex or flat axis, sometimes with gynophore; $\underline{K}$ (5), often with nectaries, $\underline{C}$ 5 usu. clawed, $\underline{A}$ 5+5, often some aborted, $\underline{G}$ usu. (3), each with 1 ov.; schizocarp, nut or drupe; no endosp.
14. Trigoniaceae: woody often climbing pl. with alt. or opp. $\perp$ stip. or not and ♂ obliquely $\perp$ 5-merous fls.; $\underline{K}$ (5), $\underline{C}$ 5-3 often very unequal, $\underline{A}$ 5-6-10, $\pm$ united in tube at base, $\underline{G}$ (3) with ∞ -2 ov. each; caps.; endosp. or not.
15. Vochysiaceae: woody, rarely herbs, with opp. or whorled simple l., stip. or not, and ♂ obliquely $\perp$ fls.; $\underline{K}$ (5), one often spurred, $\underline{C}$ usu. 3-1, perig. or epig., $\underline{A}$ 1 and stds., $\underline{G}$ or $\overline{G}$ (3) each with ∞ -2 ov.; fr. indeh. or caps.; no endosp.

B; d; δ

3. *Polygalineae*: fls. reg. or $\cdot\cdot$ with two whorls of sta.; anthers opening by pores, G (2), median (fams. 16, 17).
4. *Dichapetalineae*: fls. reg. or $\cdot\cdot$ with 1 whorl of sta.; C or (C), ov. with 1 integ., seed sometimes with caruncle (fam. 18).
5. *Tricoccae*: fls. reg. δ φ often much reduced; G (3) each with 2—1 ov. with 2 integ.; usu. caruncle (fam. 19).
6. *Callitrichineae*: herbs, often submerged, with crowded l. and small axillary monoec. naked fls.; δ with term. sta., φ with 2 transv. cpls. divided into 4, with 1 ov. in each section; fr. of 4 nutlets; endosp. (fam. 20).
24. SAPINDALES. Usu. woody; as last, but ov. in reversed position, pend. with dorsal raphe and micropyle up, or erect with ventral raphe and micropyle down.
 1. *Buxineae*: haplochlam.; ov. with 2 integs. (fam. 1).
 2. *Empetrineae*: heterochlam., cpls. each with 1 erect ov. with 1 integ., united till ripe; shrubs (fam. 2).
 3. *Coriariineae*: heterochlam., cpls. each with 1 pend. ov. with 2 integ., finally free; shrubs (fam. 3).
 4. *Limnanthineae*: heterochlam., cpls. each with 1 erect ov. with 1 integ., finally free; herbs (fam. 4).
 5. *Anacardiineae*: heterochlam., rarely apet., reg.; G usu. oligomerous; woody with resin passages (fam. 5).
 6. *Celastrineae*: fls. heterochlam., reg., with 2 or 1 whorls of A; G most often oligomerous (fams. 6—14).

16. Tremandraceae: shrubs with entire or toothed l. and sol. axillary 4—5 (rarely 3)-merous ♂ reg. fls.; K free, C valv., A in 2 whorls, G (2) with 1—2 ov. each; caps.; endosp.
17. Polygalaceae: herbs, shrubs, or trees with simple entire usu. alt. exstip. l. and racemes, spikes, or panicles of ♂ · fls.; K usu. 5, 2 larger and petaloid, C 3, 1 often keel-like, A (4+4) or fewer, usu. united below, G usu. (2), 2-loc. with 1 ov. in each; caps. nut or drupe; endosp. or o.
18. Dichapetalaceae: woody, often lianes, with entire stip. l. and small ♂ or ♂ ♀ usu. reg. fls. with disc or scales; K 5 or (5), C 5 or (5), often forked, A 5, sometimes united to C, G (2—3) each with 2 ov.; drupe; no endosp.
19. Euphorbiaceae: herbs, shrubs, and trees, usu. with alt. often stip. l., often latex, and cpd. infls. of ♂ ♀ reg. usu. 5-merous fls.; P usu. in 1 whorl, or o, A 1—∞ free or united or branched, G usu. (3), 3-loc. with 2-lobed styles, and 1—2 pend. anat. ov. in each, with ventral raphe and micropyle usu. with caruncle; usu. schizocarp-caps.; endosp.
20. Callitrichaceae:

24

1. Buxaceae: woody pl. with entire evergr. exstip. l. and reg. ♂ ♀ apert. or naked fls., sol. or in racemose infls.; A 4—∞, G (3) or (2—4) each with 2—1 ov.; caps. or drupe; endosp.
2. Empetraceae: ericoid shrubs with linear exstip. grooved l. and heads of small ♂ ♀ reg. fls.; K, C, A 2—3, G (2—9): drupe; no caruncle.
3. Coriariaceae: woody pl. with opp. or whorled exstip. l. and axillary or racemed ♂ or ♂ ♀ reg. fls.; K, C 5, A 5+5, G 5—8; schizocarp, endosp.
4. Limnanthaceae: annuals with alt. exstip. l. and sol. axillary ♂ reg. 5—3-merous fls.; K, C, 5—3, A 10—6, G (5—3), with 1 ov. in each, separating when ripe; no endosp.
5. Anacardiaceae: woody pl. with alt. exstip. not gland-dotted l. and ∞ fls. in panicles, typically 5-merous, hypog. to epig.; A 10—5 or other number, G (3—1) rarely (5), each with 1 anat. ov., often only one fertile; drupe, no endosp.
6. Cyrillaceae: woody pl. with evergr. l., and racemes of small ♂ reg. 5-merous fls.; K, C sometimes united, A in 2 whorls, G (5—2)-loc. each with 1 ov.; endosp.
7. Pentaphylacaceae: woody pl. with alt. leathery l. and small ♂ reg. fls. in racemes below l.; K, C, A 5, G (5) each with 2 pend. ov.; caps.; endosp.
8. Corynocarpaceae: woody pl. with alt. leathery l. and small ♂ fls. in panicles; inner sta. stds., G (2), 1 fertile with 1 pend. ov.; drupe; no endosp.

7. *Icacinineae*: fls. heterochlam. reg. with 1 whorl of sta. before K; G usu. 1, integ. 1, fr. 1-seeded (fam. 15).
8. *Sapindineae*: fls. heterochlam., typically with 2 whorls of sta, but with aborted sta. and cpls., reg. or obliquely $\perp$; ov. with 2 integs. (fams. 16—18).
9. *Sabiineae*: fls. heterochlam., sta. before pets. (fam. 19).
10. *Melianthineae*: fls. heterochlam., $\perp$, with 1, rarely 2, whorls of sta. with free anthers (fam. 20).
11. *Balsaminineae*: as last, but anthers united (fam. 21).

9. Aquifoliaceae: woody pl. with alt. evergr. simple l., stips. small or none, and dioec., reg., 4—more-merous ♂ ♀ fls. in cymose umbels; K, C 4, A 4 often epipet., G (4—6) or more, each with 1—2 pend. ov.; drupe with several stones; endosp.
10. Celastraceae: woody pl. with simple opp. or alt. l., sometimes stip., and small ♀ reg. 4—5-merous fls. in cymose umbels; A 4—5 on edge of disc, G (2—5) each with ∞—1 ov.; caps. or berry; often aril; endosp. or not.
11. Hippocrateaceae: woody pl., often climbing, with opp. or alt. simple l., stips. small or none, and small, ♀ reg. fls. in cymose umbels; K, C 5, A 3, rarely 5, G (3) each with ∞—2 ov.; berry or 3-winged fr.; no endosp.
12. Salvadoraceae: woody pl. with opp. simple l. and sometimes bristle-like stips., and panicles of ♂ or ♂ ♀ reg. fls.; K (4—2), C 4—5 or (4—5), A 4—5, G (2), 1—2-loc. with 1—2 basal ov. in each; berry or drupe, usu. 1-seeded; no endosp.
13. Stackhousiaceae: herbs with alt. exstip. l. and spikes or cymes of fl.; K, C, A 5, G (2—5)-loc. each with 1 erect ov.; schizocarp; endosp.
14. Staphyleaceae: woody pl. with opp. lobed stip. l. and panicles or racemes of fls.; K, C 5, A 5, outside disc, G (2—3), free above with ∞—few pend. ov.; caps.; endosp.
15. Icacinaceae: woody pl. some climbing, usu. with alt. exstip. l. and small ♂ or ♂ ♀ reg. fls.; K, C, A 5—4, G (3), usu. 1 only with 2 pend. ov.; drupe; endosp.
16. Aceraceae: trees with opp. exstip. l. and small reg. ♂ ♂ ♀ fls. in spikes, racemes or panicles; axis disc-like or concave; K, C, A 4—10, G (2) each with 2 ov.; fr. with 1-seeded samaras; no endosp.
17. Hippocastanaceae: trees with opp. palmate exstip. l. and cymose racemes of ♂ ♀ ♂ ♀ fls.; K (5), C 4—5, A 5—8, G (3)-loc. each with 2 ov.; caps. 3—1-loc. usu. 1-seeded; no endosp.
18. Sapindaceae: woody pl. with alt. l. and usu. ♂ ♀ ♂ ♀ fls. with extrastaminal disc; K 5, C 5—3 or 0, often with scales, A usu. 8, rarely 10, 5, or ∞, G (2—3) each usu. with 1 ov.; caps., drupe, nut, or schizocarp; no endosp.
19. Sabiaceae: woody pl., often climbers, with alt. exstip. l. and small ♂ or ♂ ♂ ♀ fls. in racemes or cymose racemes; K (2—5), C 4—5, A 5 antepetalous, G (2—3) each with 2 ov.; fr. 1-loc., 1-seeded; no endosp.
20. Melianthaceae: woody pl. with alt. usu. pinnate l., stip. or not, and racemes of ♂ ♂ fls.; K, C 5, A 5—4, rarely 10, unequal or partly united, G (4—5) each with ∞—1 ov.; caps.; aril or not; endosp.
21. Balsaminaceae: herbs with watery translucent stems and alt. usu. exstip. l., and ♂ ♂ fls.; K 5, the 2 ant. often small or aborted, C 5, the lat. ones united in pairs, A (5), G (5)-loc. each with ∞ ov.; caps. usu. explosive; no endosp.

B; d; δ ; ϵ .

25. RHAMNALES. Fl. cyclic, diploclam., sometimes apert., with 1 whorl of sta. before petals, reg.; G (5—2) each with 1—2 ascending ov. with dorsal, lat., or ventral raphe and 2 integuments.
26. MALVALES. Fl. cyclic, exc. sometimes the A, heterochlam., rarely apert., usu. δ and reg.; K, C usu. 5-merous, K usu. valv., A ∞ or in 2 whorls, the inner branched, G (2— ∞) each with 1— ∞ anatropous ov. with 2 integuments.
1. *Elaeocarpaceae*: K $\pm$ free, anthers dithecous with pores; no mucilage cells (fam. 1).
 2. *Chlaenineae*: K free, imbr., A enclosed by a cup, anthers dithecous with slits; mucilage cells often present (fam. 2).
 3. *Malvaceae*: K rarely imbr., usu. valv.; mucilage cells (fams. 3—7).
 4. *Scytopetalineae*: sepals united into dish-like K (fam. 8).
- ϵ . Fls. spirocyclic or in 5—4 whorls; apocarpous only in lower forms, syncarpy the rule, often with a sinking of G in axis (Orders 27, 28).
27. PARIETALES. Fl. spirocyclic or cyclic, often A and G ∞ , heterochlam., rarely apert., hypog. to epig.; G $\pm$ united, often with parietal plac. which may touch in centre, very rarely with basal ov.
1. *Theineae*: G free on convex or flat axis; endosperm oily (fams. 1—9).

25

1. Rhamnaceae: woody pl., rarely herbs, often climbing, with simple stip. l. and small greenish or yellowish fls. often in axillary cymose infls.; K 5—4, C 5—4 small, or 0, A 5—4, $\underline{G}$ to $\bar{G}$ (5—2) with 1 ov. in each; dry fr. or drupe; endosp. little or none.
2. Vitaceae: climbing shrubs often with tendrils opp. l.; like preceding, but berry: C valv., often united above and falling as a whole, $\underline{G}$ (2—8); endosp.

26

1. Elaeocarpaceae: woody pl. with simple stip. l. and $\varnothing$ 5—4-merous fls.; A ∞ , $\underline{G}$ (2— ∞) with ∞ ov. and 1 style, 2— ∞ -loc., rarely 1-loc.; caps., rarely drupe; sometimes aril; endosp.
2. Chlaenaceae: woody pl. with alt. stip. l. and $\varnothing$ reg. fls.; K 5, C 5—6, A 10— ∞ , $\underline{G}$ (3) each with 2 ov.; caps.; endosp.
3. Gonystilaceae: shrubs with alt. entire exstip. l. and cymose panicles of $\varnothing$ reg. fls.; K 5—4, C 5—4, usu. divided, A ∞ , anthers ditheous, $\underline{G}$ (5—3), each with 1 pend. ov.; berry; no endosp.
4. Tiliaceae: usu. woody pl. with alt. stip. l. and $\varnothing$ reg. fls.; K 5, C 5 or 0, A ∞ rarely to 10, free or in bundles, anthers ditheous, $\underline{G}$ (2— ∞), each with 1— ∞ ov., 2— ∞ -loc.; endosp.
5. Malvaceae: herbs, shrubs, or trees with simple or lobed stip. l. and $\varnothing$ usu. conspic. fls., sol., or in infls.; K 5, often with epicalyx, C 5, conv.; A usu. ∞ in 2 whorls, united in a tube below, monotheous, with thorny pollen, $\underline{G}$ (5— ∞), each with 1— ∞ ov.; styles as many or twice; caps. or schizocarp.; endosp.
6. Bombacaceae: woody pl. with entire or palmate stip. l. and often conspic. fls.; like last, but anthers with 1, 2 or more loc. and smooth pollen; $\underline{G}$ (2—5) with 2— ∞ ov., seeds sometimes enclosed in hairs from pericarp; endosp. thin or 0.
7. Sterculiaceae: trees, shrubs and herbs with alt. simple or cpd. stip. l. and complex infls. of $\varnothing$ or σ $\varnothing$ fls.; (K), C conv. or 0, A in 2 whorls, the outer stds., the inner often branched, all $\pm$ united; anthers 2-loc., often andro-gynophore; $\underline{G}$ usu. (5), antepet., each with 2— ∞ ov.; usu. schizocarp.; endosp.
8. Scytopetalaceae: woody pl. with alt. leathery l. and bunches or racemes of long-stalked fls.; K dish-like, C 3—7 valv., A ∞ , G (4—6), each with 2—6 pend. ov.; fr. woody or drupe, 1-seeded.

27

1. Dilleniaceae: woody, sometimes climbing, rarely herbs, with usu. entire alt. evergr. l., stip. or not, and usu. $\varnothing$ reg. yellow or white fls.; K 3— ∞ , C 5—3, A ∞ , rarely 10 or less, $\underline{G}$ ∞ —1, each with 1— ∞ ov.; fr. dehis. or not; aril; endosp.

2. *Tamaricineae*: G free on flat axis; endosp. starchy or none, C free, A in whorls, or if ∞ in bundles (fams. 10—12).
3. *Fouquierineae*: as last, but endosp. oily, and (C) (fam. 13).
4. *Cistineae*: G free on flat or convex axis; endosp. starchy, C free, A ∞ not in bundles (fams. 14, 15).

2. Eucryphiaceae: woody with evergr. opp. stip. l. and sol. axillary $\varnothing$ reg. white fls.; K, C 4, A ∞ , $\underline{G}$ (5—18) each with ∞ pend. ov., becoming free on ripening; seed winged; endosp.
3. Ochnaceae: woody, or undershrubs with evergr. stip. l., usu. with $\parallel$ lat. nerves, and panicles of showy usu. yellow $\varnothing$ reg. (rarely $\cdot$) fls., axis often enlarging after flg.; K 4—10, C 5, rarely 4—10, A 10 or ∞ , sometimes stds., $\underline{G}$ (2—5—10) with one style, often free below, with ∞ —1 erect or pend. ov.; endosp. or o.
4. Caryocaraceae: woody with ternate evergr. stip. l. and term. racemes of $\varnothing$ reg. fls.; K (5), C (5), A ∞ , $\underline{G}$ (4—8—20) rarely (1—3) each loc. with 1 pend. ov.; schizocarp; endosp. thin or o.
5. Marcgraviaceae: woody, often climbing and epiph., with simple exstip. l. and racemes of $\varnothing$ reg. fls., the br. metam. into hollow nectaries; K 4—5, C (4—5), A 4—6— ∞ , $\underline{G}$ (5) or (2—8— ∞) with ∞ ov. on originally parietal plac. afterwards meeting in centre; caps.; no endosp.
6. Quinaceae: woody with shining evergr. stip. l. and racemes or panicles of $\varnothing$ δ $\varnothing$ reg. fls.; K, C 4—5, A 15—30, $\underline{G}$ (2—3) or (7), each with 2 axile ov.; berry.
7. Theaceae: woody with simple usu. alt. exstip. l. and $\varnothing$ reg. fls.; K 5—7, C 5—9, sometimes united below, A ∞ —5, sometimes in bundles, $\underline{G}$ (3—5) or (2— ∞) with ∞ —1 ov. in each on axile plac.; caps.; endosp. or o.
8. Guttiferae: woody, rarely herbs, with simple usu. opp. rarely stip. l., resin passages, and $\varnothing$ or δ $\varnothing$ reg. fls.; A ∞ —4, often partly stds. and united in groups, $\underline{G}$ (3—5) or (1—15) with ∞ —1 ov.; no endosp.
9. Dipterocarpaceae: trees with alt. evergr. stip. l., resin passages, and panicles of $\varnothing$ reg. fls.; K 5 (2, 3 or all lengthening to wings on the fr.), C 5 free or united, A ∞ or 15—10—5, $\underline{G}$ (3—1) each with ∞ —2 ov.; fr. usu. 1-seeded indeh.; no endosp.
10. Elatinaceae: undershrubs or herbs, often water pl. with opp. or whorled stip. l. and small $\varnothing$ reg. fls., axillary or in cymes, K, C 2—5, A 2—5 or 4—10, $\underline{G}$ (2—5) with ∞ axill. ov.; caps.; endosp. thin or o.
11. Frankeniaceae: undershrubs or herbs with small opp. exstip. l. and term. or cymed $\varnothing$ reg. 4—6-merous fls.; (K), C with ligule, A usu. 6, sometimes ∞ free or united below, $\underline{G}$ (4—2) with ∞ erect ov. on parietal plac.; caps.; endosp.
12. Tamaricaceae: shrubs or herbs with small alt. exstip. l. and $\varnothing$ reg. 4—6-merous fls.; A as many or twice as many as C, or ∞ in groups, $\underline{G}$ (5—2) with ∞ ascending ov. on basal plac.; style divided; caps.; seed hairy; endosperm or none.
13. Fouquieriaceae: shrubs with decid. l. and thorny midrib, and racemes or panicles of showy $\varnothing$ reg. fls.; K 5, C (5), A 10—15, $\underline{G}$ (3), each with 4—6 ov.; seeds hairy or winged.
14. Cistaceae: herbs and shrubs with usu. opp. l. with glandular hairs and ethereal oil, and $\varnothing$ reg. fls.; K 5—3, C 5—3—0, A ∞ , $\underline{G}$ (5—10) with ∞ or 2 ov. on parietal plac.; caps.; endosp.
15. Bixaceae: woody pl. with alt. simple l. and showy $\varnothing$ reg. fls. in panicles; K, C 5, A ∞ , $\underline{G}$ (2) each with ∞ ov. on parietal plac.; style 1; caps.; endosp.

5. *Cochlospermineae*: as last, but endosp. of kidney-shaped seed oily (fam. 16).
6. *Flacourtiineae*: G free on convex axis, or in tubular axis rarely united at sides to G; endosp. oily (fams. 17—24).
7. *Papayineae*: G free in tubular or bell-shaped axis; endosp. oily; latex (fam. 25).
8. *Loasineae*: G sunk in and united to axis; endosp. oily, rarely none (fam. 26).
- 9. *Datiscineae*: G sunk in and united to axis; endosp. thin, embryo oily; fls. in racemes (fam. 27).
10. *Begoniineae*: as last, but no endosp.; fls. in dichasia or scorpioid cymes (fam. 28).

16. Cochlospermaceae: woody, usu. with lobed or cpd. l. and showy
 $\varnothing$ reg. or $\cdot$ fls. in racemes or panicles; K, C 4—5, A ∞ , $\underline{G}$ (3—5)
each with ∞ ov. on parietal or almost central plac.; caps.;
endosp.
17. Winteranaceae: woody pl. with alt. exstip. l. and cymose umbels
of $\varnothing$ reg. fls.; K 4—5, C 4—5 or 0, A (20 or less), $\underline{G}$ (2—5) with
2— ∞ ov. on parietal plac.; berry; endosp.
- ✓ 18. Violaceae: herbs, or woody, with alt. stip. l. and $\varnothing$ reg. or $\cdot$ fls.;
K, C, A 5, $\underline{G}$ (3), each with 1— ∞ ov. on parietal plac.; caps.
or berry; endosp.
19. Flacourtiaceae: usu. woody pl. with alt. stip. simple l., and $\varnothing$ or
 σ $\varnothing$ reg. fls.; K 2—15, C 10—0, A usu. ∞ , $\underline{G}$ or semi-inf. (2—
10) usu. with ∞ ov. on parietal plac.; berry or caps.; often aril;
endosp.
20. Stachyuraceae: small shrubs with alt. l. and racemes of small $\varnothing$ or
polyg. reg. fls.; K, C 4, A 8, $\underline{G}$ (4) with ∞ ov.; berry; aril;
endosp.
21. Turneraceae: herbs, trees or shrubs with alt. l., stip. or not, and
axillary or racemed or cymed $\varnothing$ reg. fls. with tubular axis; K, C,
A 5, $\underline{G}$ (3), each with 3— ∞ ov. on parietal plac.; style divided;
caps.; aril; endosp.
22. Malesherbiaceae: herbs or undershrubs with alt. exstip. usu. very
hairy l. and racemes or cymes of $\varnothing$ reg. 5-merous fls. with tubular
axis and gynophore; A 5, concrescent with gynophore, $\underline{G}$ (3)
with ∞ ov. on parietal plac.; caps.; no aril.
23. Passifloraceae: herbs or shrubs often climbing by tendrils with
simple usu. palmately lobed l., stip. or not, and fls. sol. or in
racemes or cymes, reg., $\varnothing$ or σ $\varnothing$, with axis often $\pm$ tubular ending
in effigurations; K, C 5, rarely 3—8, A usu. 5 or 4—8, rarely ∞ ,
united to prolongation of axis, $\underline{G}$ (3—5) usu. with ∞ ov. on
parietal plac.; caps. or berry; usu. aril and endosp.
24. Achariaceae: herbs or undershrubs with simple or lobed l. and
single fls. or few in an axil, σ $\varnothing$ reg., 3—5-merous; K, C, A 3—5,
 $\underline{G}$ as last; caps.; endosp.
25. Caricaceae: woody pl. with simple or cpd. exstip. l. and axillary
infs. of σ $\varnothing$ reg. fls. with hollow axis; K 5, C (5) in long tube
in σ , short in $\varnothing$; A 5 + 5, $\underline{G}$ (3—5) with ∞ ov. on parietal plac.;
berry; endosp.
26. Loasaceae: herbs, rarely shrubs, sometimes twining, with alt. or
opp. exstip. l. and often stinging hairs, and $\varnothing$ fls.; K 5 (rarely
4—7), C 5, rarely united, often boat-shaped, A ∞ , those before
K often transformed to nectaries, $\overline{G}$ (3—7) each with 1— ∞ ov.,
usu. on parietal plac.; caps. sometimes spirally twisted; endosp.
27. Datisceae: herbs or shrubs with exstip. l. and racemes of small
usu. σ $\varnothing$ fls.; σ K 3—9, C 0 or 8, A 4—25, $\varnothing$ and $\varnothing$ P 3—8,
 $\underline{G}$ (3—8) with parietal plac. and ∞ ov.; caps.; endosp. slight.
- ✓ 28. Begoniaceae: herbs or undershrubs with alt. asymmetric stip. l.
and dichasia or cymes of σ $\varnothing$ fls.; σ K 2, rarely 5, C 2—6 or 0,
A ∞ , $\varnothing$ P 5—2 or 3 + 3 or 8, $\overline{G}$ (3), rarely (4—5) with ∞ ov. on
parietal plac.; caps.; no endosp.

B; d; ϵ ; ζ

11. *Ancistrocladineae*: G sunk in and united to axis, 1-loc. with 1 basal ov.; endosp. ruminant, starchy (fam. 29).

28. *OPUNTIALES*. Succulents, usu. without l., often thorny, with hemicyclic, heterochlam., $\varnothing$ reg., or rarely $\div$, fls.; K, C, A ∞ , on tubular axis, and $\bar{G}$ ($4-\infty$), 1-loc. with ∞ ov. on parietal plac.; berry-like fr. with ∞ seeds; endosp. little or none.

9. Fls. cyclic; G usu. sunk in hollow axis, and usu. united thereto (Orders 29, 30).

29. *MYRTIFLORAE*. Herbs or woody pl., with cyclic heterochlam., rarely apert. or $\div$ fls. with concave axis; A in 1 or 2 whorls, sometimes branched and in bundles, G ($2-\infty$) usu. united to axis, rarely 1 free.

1. *Thymelaeineae*: woody pl. rarely herbs, with simple l.; fls. with dish or tubular axis (at least in $\varnothing$ and φ), reg. with ($2-4$) cpls. free of axis (fams. 1-5).

2. *Myrtineae*: herbs or woody pl. with alt. or opp. l. and fls. with tubular axis and ($2-\infty$) cpls. usu. united to axis; ov. with 1 integ. (fams. 6-17).

29. Ancistrocladaceae: lianes with lanc. l. and racemes or panicles of ♂ reg. fls.; K 5, C 5, slightly united below, A 5—10, $\overline{G}$ (3), only 1 loc. with 1 basal ov.; nut; endosp.

28

1. Cactaceae:

29

1. Geissolomataceae: shrub with opp. evergr. l. and sol. axillary ♂ fls.; K 4, valv., C 0, A 4+4, $\underline{G}$ (4), each with 2 pend. ov.; 1 style; caps.; endosp.
2. Penaeaceae: shrubs with small opp. l. and sol. axillary ♂ reg. fls., K 4, valv., C 0, A 4, $\underline{G}$ (4), each with 2—4 erect ov.; 1 style; caps.; no endosp.
3. Oliniaceae: shrubs with opp. leathery l. and small ♂ fls. in cymose umbels at ends of twigs; K 4—5, petaloid, C 4—5, smaller, A 4—5, anteposed, $\overline{G}$ (3—5) each with 2—3 axile ov.; 1 style; drupe; no endosp.
4. Thymelaeaceae: shrubs and trees, rarely herbs, with entire alt. or opp. exstip. l. and sol. or racemed or spiked ♂ fls. with cup-like or tubular axis; K 5—4, C 5—4—0, A 5—4 or 10—8, $\underline{G}$ (5—2) or 1, each with 1 pend. ov.; 1 style; endosp. or 0.
5. Elaeagnaceae: woody with alt. or opp. entire l. and fls. as last, ♂ or ♂ ♀ with flat or cup-shaped axis; K 4, C usu. 0, A 4 or 8, $\underline{G}$ 1 with 1 ascending ov.; nut; endosp. little or none.
6. Lythraceae: herbs and shrubs with simple entire usu. opp. stip. l. and racemes, panicles, or dichasia of ♂, reg. or ♂, 3—16- usu. 4—6-merous fls. with hollow or tubular axis; K valv., C sometimes 0, A twice as many or 1—∞, $\underline{G}$ (2—6), 2—6 rarely 1-loc. each with ∞—2 ov.; caps.; no endosp.
7. Sonneratiaceae: woody pl. with opp. exstip. l. and ♂ or ♂ ♀ reg. fls. with bell-shaped axis; K 4—8, C 4—8 or 0, A ∞, $\overline{G}$ (4—15) united to hollow axis, with 1 style, 4—15-loc. with ∞ ov.; caps. or berry-like fr.; no endosp.
8. Punicaceae: woody pl. with entire l. and showy axillary ♂ reg. fls. with top-shaped axis; K, C 5—7, A ∞, $\underline{G}$ (9) in superposed whorls with ∞ ov. united to axis, 1 style; berry-like fr.; no endosp.
9. Lecythidaceae: woody pl. with alt. entire exstip. l. and ♂ fls. with hollow axis; K usu. 4—6, C 4—6, rarely more or 0, A ∞, ± united at base, bent inwards in bud, $\overline{G}$ (2—6) each with ∞—1 ov.; style 1; fleshy or woody fr.; no endosp.
10. Rhizophoraceae: woody pl. usu. with opp. stip. l. and usu. ♂ reg. fls., sol. or in cymose infls., hypog. or epig.; K 3—16, usu. 4—8, C as many or 0, A 8—∞, $\underline{G}$ usu. (2—5), rarely 6, each with 2—4—∞ pend. axile ov.; fr. usu. with 1 seed per loc.; sometimes viviparous.

3. *Hippuridineae*: fls. epig. with 1 sta.; 1 cpl. with 1 ov. and no integ. (fam. 18).
4. *Cynomoriineae*: root paras. with epig. fls. with 1 sta., cpl. with 1 ov. with 1 integ. (fam. 19).

30. UMBELLIFLORAE. Fls. usu. in umbels, cyclic, heterochlam.; usu. with 1 whorl of sta., epig., 4—5-, rarely ∞ -merous, ♂ reg.; $\bar{G}$ (5—1) or (∞) each with 1 (rarely 2) pend. ov. with 1 integ., rich endosp.

11. Nyssaceae: shrubs with alt. exstip. l. and small ♀ or ♂ ♀ fls. usu. with hollow axis, the ♂ in racemes, the ♀ sol., K 5 or more, C usu. 5, valv., or 0, A twice as many, $\bar{G}$ usu. 1-loc. rarely 6—10-loc. with 1 ov. in each; drupe; endosp.
12. Alangiaceae: shrubs with alt. l. and umbels of ♀ fls.; K (4—10), C 4—10, narrow, valv., A 4—10 or 2—4 times as many, $\bar{G}$ 1—2-loc. with 1 pend. ov. in each; fr. drupaceous with 1 seed; endosp.
13. Combretaceae: woody, often climbing, with opp. entire exstip. l. and racemes of ♀ or ♂ ♀ reg. fls.; K, C, 4—3, rarely 6—8 (C may be 0), A 4—5—8—10, rarely ∞ , $\bar{G}$ 1-loc. with 2—6 pend. ov.; fr. leathery or drupaceous, often winged; no endosp.
14. Myrtaceae: woody with opp. or alt. entire exstip. l. and ♀ reg. fls.; K, C usu. 4—5, A ∞ sometimes in bundles, $\bar{G}$ (2—5— ∞)-loc., each with 8—1 ov.; style 1; fr. various; no endosp.
15. Melastomaceae: herbs or woody pl. with opp. or whorled exstip. l. with often 3—9 equal nerves, and showy ♀ reg. 3— ∞ -merous fls. with hollow axis; K=C, A twice as many, anthers usu. opening by pores, connective usu. with appendages, (G) usu. = K, free or united to axis, 1 style; seeds ∞ in caps. or berry; no endosp.
16. Onagraceae: usu. herbs with opp. or alt. exstip. l. and axillary or racemed ♀ usu. reg. fls. with tubular axis; K 2—4, rarely more, C 2—4 or more or 0, A usu. 4—8, $\bar{G}$ usu. (4), each with 1— ∞ ov.; 1 style; caps., nut, or berry; endosp. little or 0.
17. Haloragidaceae: herbs often of marsh or water, with inconspic. reg. 4—1-merous ♀ or ♂ ♀ fls.; C often 0, A twice or less, $\bar{G}$ (4), rarely 1; fr. nut- or drupe-like; endosp.
18. Hippuridaceae: water pl. with whorled l. and inconspic. apet. fls., $\bar{G}$ 1 with 1 style and 1 pend. ov.
19. Cynomoriaceae: paras. with rhiz. and ♀ or ♂ ♀ fls.; ♂ with 1 epig. sta., ♀ with 1 pend. ov.

30

1. Araliaceae: woody pl., rarely herbs, with usu. alt. often much divided l., commonly stip., and oil passages, and usu. 5 (3— ∞)-merous fls. in heads, umbels, or spikes, often in cpd. infls.; K sometimes indistinct, A=C, $\bar{G}$ (∞ —1); fr. berry- or drupe-like with ∞ —1 stones; endosp.
2. Umbelliferae: herbs with tap root or rhiz., hollow stem, and alt. usu. much divided, sheathing exstip. l., and usu. ♀ reg. small 5-merous fls. in umbels, simple or cpd.; K often indistinguishable, A=K, $\bar{G}$ (2) with two styles on swollen style base; schizocarp, the mericarps on a carpophore, each usu. with 5 ribs, often with vittae between; oily endosp.
3. Cornaceae: trees or shrubs with opp. or alt. usu. entire exstip. l. and umbels, panicles or heads of small, sometimes ♂ ♀, reg. 4—5— ∞ -merous fls.; A= or 2—4 times as many as C, $\bar{G}$ (4—1) with epig. disc and usu. 1 ov. each; fr. 1—4-loc. with 1—4 seeds.

Sympetalae (fl. usu. sympetalous)

A. Fls. sometimes polypetalous; 2 or 1 whorls of sta.; usu. hypog., rarely epig. (Orders 1—3).

1. **ERICALES.** Woody pl. or herbs with simple l. and $\varnothing$ usu. reg. 5—4-merous fls.; C usu. united, A hypog. or epig., rarely united to pets. at base, obdipl., or whorl before C not developed, G 2— ∞ , usu. before C when equal in number, sup. to inf., ov. with 1 integ.

2. **PRIMULALES.** Fls. $\varnothing$ or σ $\varnothing$, reg., rarely $\cdot$, 5—(rarely 4— ∞)-merous, usu. with 1 whorl of epipet. sta., rarely also 5 opp. K.; C usu. united, G apparently as many as C, sup. to inf., 1-loc. with ∞ —1 ov. on basal or free-central plac.

3. **PLUMBAGINALES.** Shrubs, undershrubs or herbs with simple l., often with water- or chalk-secreting glands and cpd. infl. of $\varnothing$ fls.; C or (C), A in 1 whorl, G (5) with 5 stigs., 1-loc. with 1 ov.; endosp. starchy.

B. Fls. sympet. only; sta. sometimes ∞ , usu. in 3—2 whorls; fl. usu. hypog. (Order 4).

Sympetalae

I

1. Clethraceae: woody with alt. l. and racemes of ♀ reg., 5-merous obdipl. fls.; C free, A 10 hypog., $\underline{G}$ (3) each with ∞ ov.; style long with 3 stigs.; caps. 3-valved; endosp.
2. Pyrolaceae: evergr. or saprophytic herbs with alt. l. and ♀ reg. 5-merous obdipl. fls., sol. or in racemes; C free or united, A hypog., $\underline{G}$ (5—4) with ∞ ov. in each; caps. loculic.; endosp. fleshy.
3. Lennoaceae: root paras. with ∞ ♀ reg. 5— ∞ -merous fls.; A=C, $\underline{G}$ (6—14) each with 2 ov. and false partition; drupe with 12—28 stones; endosp.
4. Ericaceae: usu. undershrubs or shrubs with alt. opp. or whorled usu. evergr. l. and single or racemed ♀ 5—4-merous obdipl. fls.; C rarely free, inserted with sta. on disc, anther loc. often with projections, pollen in tetrads, (G) sup. or inf. with axile plac. each with 1— ∞ ov., style 1 with capitate stig.; berry, drupe, caps.; endosp.
5. Epacridaceae: shrubs or undershrubs with stiff entire sess. alt. l. and usu. racemes of ♀ reg. 5—4-merous fls.; (C), A=C, epipet. or at base of hypog. disc, thecae with common slit, $\underline{G}$ usu. (5) each with 1— ∞ ov. on axile plac., style 1 with capitate stig.; caps. or drupe; endosp.
6. Diapensiaceae: undershrubs or woody herbs with ♀ reg. fls.; K 5 or (5), C (5), A 10 obdipl., or 5, $\underline{G}$ (3) each with ∞ ov. on axile plac., style 1; caps.; endosp.

2

1. Theophrastaceae: woody with alt. exstip. l. often crowded at ends of stem or branches, and ♀ or ♂ ♀ reg. rarely $\cdot$ fls.; K 5, C (5), A 5+5 stds., $\underline{G}$ 1-loc. with ∞ ov. on free-central or basal plac.; drupe with ∞ —2 seeds; endosp.
2. Myrsinaceae: woody with often evergr. entire alt. exstip. l., and ♀ or ♂ ♀ reg. fls.; K 5, C (5), A 5 rarely with 5 stds., $\underline{G}$ to $\overline{G}$, 1-loc. with ∞ ov. on basal or free-central plac.; style 1; drupe with 1 or few seeds; endosp.
3. Primulaceae: herbs with usu. alt. exstip. l. and ♀ reg. rarely $\cdot$ fls.; K (5), C (5), A 5, epipet., anteposed, and rarely 5 stds., $\underline{G}$ rarely $\frac{1}{2}$ -inf., 1-loc. with ∞ ov. on free-central plac.; caps.; endosp.

3

1. Plumbaginaceae:

4. EBENALES. Woody pl. with simple l.; (C), A in 2—3 whorls, or in 1 by abortion, rarely ∞ , G with axile plac. and several loc. with 1 or few ov. in each.
1. *Sapotineae*: $\overline{G}$ completely divided into loc., each with 1 ascending ov. with 1 integ. (fam. 1).
 2. *Diospyrineae*: $\overline{G}$ or $\frac{1}{2}$ -inf. not chambered above; ov. with 2 integs. (fams. 2—4).
- C. Sympetaly the rule; sta. always in 1 whorl; union of cpls. sometimes small; usu. hypogyny (Order 5).
5. CONTORTAE. Woody pl. or herbs with usu. opp. simple exstip. l. and usu. 5 (rarely 2—6)-merous fls.; usu. (C), rarely C or none, usu. conv., with as many or fewer sta. usu. epipet. at base of C, and G (2).
1. *Oleineae*: sta. 2, ov. with 1 integ. (fam. 1).
 2. *Gentianineae*: A = C, $\overline{G}$ 1—2-loc. usu. with ∞ ov. on axile or parietal plac. with each 1 integ. (fams. 2—5).

4

1. Sapotaceae: woody with simple alt. l., secretory passages, and usu. ♀ fls.; K 4—8 in two whorls, (C) as many in 1 whorl, or twice in 2, sometimes with lat. or dorsal appendages, A in 2 or 3 whorls, outer sometimes stds., (G) as many (or twice) as 1 whorl of sta., each with 1 basal or axile ov.; style 1; berry; endosp. or o.
2. Ebenaceae: trees with entire alt. rarely opp. exstip. l., and usu. ♂ ♀ fls., sol. or in few-fld. umbels, 3—more-merous; K persistent, C usu. conv., A as many, or 2-more times as many, free or united in bundles, G (2—16) each with 1—2 pend. ov.; berry with 1 or few seeds; endosp. often ruminant.
3. Symplocaceae: woody pl. with alt. exstip. l. and ♀ 5-merous fls.; C=or twice K, ± united, A epipet. in 1—3 whorls, G sometimes $\frac{1}{2}$ -inf. (5—2) each with 2—4 pend. ov.; style 1; drupe; endosp.
4. Styracaceae: woody pl. with simple alt. l. with stellate or scaly hairs, and small or smallish ♀ fls.; K, C (5—4), A 10—8 united at base or rarely into tube, G, rarely $\frac{1}{2}$ -inf. (5—3) each with 1 or few ov., 3—5-loc. below, 1-loc. above; drupe, indeh. fr. or caps., with 1 or few seeds; endosp.

5

1. Oleaceae: woody, sometimes climbing, rarely herbs, with opp. or whorled simple or pinnate exstip. l., and cpd. infls. of ♀ or ♂ ♀ reg. 2—6-merous fls.; C 4—5—6 or o, free or united, imbr. or valv., A 2 epipet. or hypog., G (2) each usu. with 2, rarely 1 or 4—8 axile ov.; caps., berry or drupe; endosp. or o.
2. Loganiaceae: woody, rarely herbs, with opp. or whorled often stip. l. and cymose umbels of ♀ or ♂ ♀ reg. fls.; K usu. imbr., C (4—5—∞), valv., imbr., or conv., A=C or 1, G (2) rarely more with ∞—1 axile ov. and 1 style; caps.; endosp.
3. Gentianaceae: herbs, rarely shrubs with opp. entire exstip. l. and cymose infls. of usu. ♀ reg. 4—5-merous fls.; K or (K), (C) usu. conv., A as many, G (2) usu. with ∞ ov. in 1-loc. ovary; caps.; endosp.
4. Apocynaceae: woody or herbs with simple usu. opp. entire l., and latex, and cymose infls. of ♀ reg. 5—4-merous fls.; (C) usu. conv., A epipet., G (2) often only united by style; fr. various, endosperm thin or o.
5. Asclepiadaceae: herbs or shrubby, often climbing, some succulent, with opp. or whorled, rarely alt. exstip. l., and ♀ reg. fls. sol. or in cymose umbels; K 5, C (5), usu. conv., sometimes with appendages forming a corona, A 5 usu. united below, usu. with appendages forming a corona, pollen usu. in pollinia with translators, G (2) enclosed in sta. tube, with ∞ rarely few or 1 pend. ov., united by style above; fr. 2 follicles, seeds usu. hairy; endosp.

- D.** Fls. always sympetalous, with 1 whorl of sta., often 4, with usu. 2 median cpls. fully united (Orders 6—10).
- a.** *K, C hypogynous*, with few exceptions (Orders 6, 7).
6. TUBIFLORAE. Usu. herbs, fls. typically with 4 isomeric whorls or usu. with oligomeric G, and if 4 also oligomeric A, sta. epipet., ov. with 1 integ.
1. *Convolvulineae*: 1. usu. alt., fls. usu. reg.; cpls. with few or 2 ov. with micropyle downwards; fr. rarely 4 nutlets (fams. 1, 2).
 2. *Boraginineae*: as last, but micropyle facing upwards; caps. or drupe, or 4 nutlets (fams. 3, 4).
 3. *Verbenineae*: 1. usu. opp. or whorled, fls. usu. 4; cpls. with 2, rarely 1, ov.; fr. drupe or drupe-like, or 4 nutlets (fams. 5, 6).
 4. *Solanineae*: fls. 4 or reg. usu. 5-merous; A 5—4—2, G rarely (5), usu. (2) with usu. ∞ , rarely 2—1 ov.; fr. usu. caps., never splitting to base, rarely berry or drupe (fams. 7—17).
 - A. Fr. splitting into 5 or many mericarps (fam. 7).
 - B. Fr. 2-, rarely 5— ∞ -loc., or 1-loc. (fams. 8—17).
 1. Vascular bundles bicollateral (fam. 8).
 2. Vascular bundles collateral (fams. 9—17).
 - i. G 2-loc. with ∞ to few ov. (fams. 9—11).

6

1. Convolvulaceae: usu. herbs with alt. l., often twining, usu. with large ♂ reg. 5—4-merous fls.; A epipet., G (2) rarely (3—5) each with 2 basal erect ov. on axile plac.; caps.; endosp.
2. Polemoniaceae: usu. herbs with alt. or opp. exstip. l. and ♂ usu. reg. 5-merous fls.; C usu. conv., G (3) rarely (2) or (5) each with ∞—1 erect ov.; caps.; endosp.
3. Hydrophyllaceae: herbs with alt. rarely opp. l. and scorpioid cymes of ♂ reg. 5-merous fls.; A 5, G (2) each with ∞—2 sessile or pend. ov.; caps.; endosp.
4. Boraginaceae: herbs or woody pl., often roughly hairy, with usu. alt. simple l., and scorpioid cymes of ♂ reg. 5 (rarely more)-merous fls.; G (2) each with 2 ov., 2-loc., usu. with false septum; fr. drupaceous or of 4 nutlets; endosp. or none.
5. Verbenaceae: herbs or woody pl. with usu. opp. or whorled entire or divided l. and cymose umbels of ♂ usu. 5—4 (rarely more)-merous fls.; (K), (C) often 2-lipped, A usu. 4 didynamous, or 2, G (2) rarely more, each with 2 ov., usu. 4-loc. by formation of secondary septa, style 1; drupe or schizocarp; usu. no endosp.
6. Labiatae: herbs or shrubs with decussate or whorled exstip. l. and cymose infls. often condensed in the axils into seeming whorls of ♂ 5-merous fls.; K (5), C usu. 2-lipped, A 4 didynamous or 2 with or without 2 stds., G (2) each with 2 erect ov., infolded between them; fr. of 4 nutlets; endosp. little or none.
7. Nolanaceae: herbs or undershrubs with alt. l. and sol. or racemed ♂ reg. fls.; K, C (5), A 5, G (5) with ∞ ov., divided by long. or transv. constrictions into 1—7-ovuled sections; endosp.
8. Solanaceae: herbs or shrubs with alt. l. and term. sol. or cymosely umbelled ♂ usu. reg. 5-merous fls.; A 5, G (2) obliquely placed, each with ∞—1 ov. on axile plac., style 1; berry or caps.; endosp.
9. Scrophulariaceae: herbs or shrubs, rarely trees, with alt. opp. or whorled l., and variously arranged fls., never term., ♂, ±, 5-merous fls.; A usu. 4 or 2, G (2) median with each ∞ or few ov. on axile plac., and 1 style; caps. or berry; endosp.
10. Bignoniaceae: woody pl. often climbing, with usu. opp. often cpd. l. and showy ♂ 5-merous fls., often in cpd. infls.; A 4 or 2, sometimes with 3—1 stds., G (2) median with ∞ ov., 2- or 1-loc., style 1; caps. or fleshy fr.; no endosp.

ii. G 1-loc. with $\pm$ parietal plac. and ∞ ov. (fams. 12—15).

iii. G rarely 2-loc., usu. 1-loc. with basal central plac. and ∞ ov. (fam. 16).

iv. G 2- or 1-loc., in each 1 pend. ov., or 1 pend. ov. only (fam. 17).

5. *Acanthineae*: fls. usu. $\cdot$, typically 5-merous; A 4 or 2, G (2) with usu. ∞ ov.; caps. loculicidal to very base (fam. 18).

6. *Myoporineae*: woody with alt. or opp. l. and fls. reg. or $\cdot$; 5-merous; $\underline{G}$ (2) later 4-loc., each with 2—4— ∞ ov. or (2— ∞) each with 1 pend. ov. with micropyle upwards; drupe; endosp. thin or none (fam. 19).

7. *Phrymineae*: herbs, fls. $\cdot$; $\underline{G}$ 1 with 1 orthotr. ascending ov. (fam. 20).

7. PLANTAGINALES. Usu. herbs, rarely shrubby, with usu. alt. l.; fls. $\text{\text{f}}$ or $\text{\text{m}}$ $\text{\text{f}}$, reg., 4-merous; K (4), C (4), membranous, A 4 epipet., $\underline{G}$ (2) or 1, 4—1-loc. with few or 1 anatr. ov.; caps. o nut; endosp.

b. *Pepigynous* (Orders 8—10).

a. Sta. free (Order 8).

8. RUBIALES. Woody pl. or herbs with opp. usu. simple l. and usu. reg. 5—4-merous fls.; $\underline{G}$ 1-(or more)-loc., each with ∞ —anatr. ov.

A. Sta. = C segments (fams. 1—3).

11. Pedaliaceae: herbs with glandular hairs and opp. l. (sometimes alt. above) and axillary or racemed $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; A 4 or 2, $\underline{G}$ (2) rarely (3—4) or $\overline{G}$, each with ∞ ov., 2—4-loc. transv. divided with axile plac.; caps. or nut; thin endosp.
12. Martyniaceae: as last, but anther thecae spurred; $\underline{G}$ with 2 bilobed parietal plac.; caps.; racemes; thin endosp.
13. Orobanchaceae: paras. herbs with scaly l. and term. or racemed $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; C 2-lipped, A 4 didynamous, $\underline{G}$ (2), rarely (3), each with 2 parietal plac. sometimes united in middle, and ∞ ov., 1 style; caps.; endosp.
14. Gesneriaceae: herbs or woody pl. with opp. simple l. and showy sol. or cymosely umbelled $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; C 2-lipped, A 4 or 2 with sometimes 1—3 stds., $\underline{G}$ to $\overline{G}$ (2), 1-loc. with parietal plac. and ∞ ov.; caps. or berry; endosp. or not.
15. Columelliaceae: woody pl. with opp. entire l. and cymose umbels of $\frac{\text{♂}}{\text{♀}}$ nearly reg. 5—8-merous fls.; A 2, $\underline{G}$ (2) with ∞ ov. on 2 parietal bilobed plac.; caps. 4-valved; endosp.
16. Lentibulariaceae: herbs, usu. of water or damp ground, with $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; C 2-lipped, A usu. 2, $\underline{G}$ (2) usu. 1-loc. with basal free plac. and ∞ ov.; caps. 2—4-valved, ∞ or 1-seeded; no endosp.
17. Globulariaceae: herbs with rad. l. and spherical heads or spikes of $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; A 4 or 2, $\underline{G}$ (2) 1-loc. each with 1 ov., or 1 ov. only, 1 style; 1-seeded nut; endosp.
18. Acanthaceae: herbs or shrubs with opp. l. and spikes, racemes or cymose umbels of $\frac{\text{♂}}{\text{♀}}$ 5-merous fls.; K free or united, C reg. or $\frac{\text{♂}}{\text{♀}}$, A 4 or 2, sometimes with 1—3 stds., $\underline{G}$ (2) median, each with ∞ —2 ov.; caps. loculicidal to very base; seeds usu. with no endosp. and with jaculators.
19. Myoporaceae:
20. Phrymaceae:

7

1. Plantaginaceae:

8

1. Rubiaceae: herbs or woody pl. with decussate entire l. and interpetiolar stip. sometimes = l.; and usu. $\frac{\text{♂}}{\text{♀}}$ reg. fls. in cymes often condensed to heads, 5—4 (rarely more)-merous; K usu. open, C valv. or conv., $\overline{G}$ (2) each with 1— ∞ ov., style 1; fr. various; endosp.

B. Sta. fewer than C segments, $\bar{G}$ always with only 1 fertile loc. and 1 pend. ov. (fams. 4, 5).

β . Sta. close together or partly united (Orders 9, 10).

9. CUCURBITALES. Fls. typically 5-merous, usu. δ $\neq$ reg., with cup-like axis; A 5 free, at edge of axis, or each 2 united, or all 5 in a central synandrium, $\bar{G}$ usu. (3), 3-loc. usu. with ∞ ov. and usu. forked stigs.; fr. berry-like, no endosp.
10. CAMPANULATAE. Usu. herbs, rarely woody, with typically 5-merous fls. with 1 whorl of sta. and usu. fewer cpls.; anthers with 2-loc. thecae, often united, $\bar{G}$ or $\underline{G}$ with several loc. and ∞ —1 ov. in each, or 1-loc. with 1 ov.

2. Caprifoliaceae: woody with opp. usu. exstip. l. and ♂ reg. or · 5-merous fls.; (C), $\bar{G}$ (2—5) each with 1— ∞ axile pend. ov.; fr. usu. berry- or drupe-like; endosp.
3. Adoxaceae: rhiz. herb; stems with 2 opp. l. and 5—7-fl. cyme of ♂ homochlam. fls. (or with aborted K); term. fl. 4 (5)-, lat. 5 (6)-merous, all with 2 bracteoles; A 4—5—6 split to base, $\bar{G}$ (3—4—5) $\frac{1}{2}$ -inf. each with 1 pend. ov.; drupe; endosp.
4. Valerianaceae: herbs, rarely shrubby, with opp. exstip. l. and cymose umbels or heads of ♂ or ♂ ♀ fls. without plane of symmetry; K indistinct in fl., later enlarging to pappus, C (5) or (3—4), often spurred at base, A 1—4, $\bar{G}$ (3), 1 developed with 1 pend. ov.; style 1; no endosp.
5. Dipsacaceae: herbs or undershrubs with opp. exstip. l. and cymose heads or umbels of ♂ usu. · fls. with epicalyx; A 4 or less, $\bar{G}$ (2), 1-loc. with 1 pend. ov. and 1 style; endosp.

9

1. Cucurbitaceae:

10

1. Campanulaceae: herbs or woody pl. usu. with alt. exstip. l., latex, and often showy ♂ reg. or · 5-merous fls.; C usu. united, A free or united with intr. anthers, $\bar{G}$ usu. (2—5) with ∞ ov., style 1, rarely 1-loc.; fr. caps. or berry-like; endosp.
2. Goodeniaceae: herbs or shrubs with simple l. and ♂ usu. · 5-merous fls.; A free or epipet., $\bar{G}$ usu. inf., 2- rarely 1-loc. with 1—2 or many ov. in each; style with pollen cup; fr. caps.-like; endosp.
3. Brunoniaceae: herb with rad. entire exstip. l., and blue ♂ reg. 5-merous fls. in heads; C cylindrical, A 5 with united anthers, $\bar{G}$ 1, 1-loc., style simple with pollen cup; no endosp.
4. Stylidiaceae: herbs with simple exstip. l. and ♂ or ♂ ♀ usu. · 5-merous fls.; C usu. united, A 3—2 free or united to style, with extr. anthers, $\bar{G}$ (2) 2- or 1-loc.; fr. septicidal or indeh.; endosp.
5. Calyceraceae: herbs or undershrubs with alt. exstip. l. and ♂ or ♂ ♀ reg. or · 4—5-merous fls. in heads surrounded by bracts; A united but anthers free, $\bar{G}$ 1-loc. with 1 pend. ov.; style 1; little endosp.
6. Compositae: herbs, shrubs or rarely trees with usu. alt., rarely opp. l. and ♂ or ♂ ♀ reg. or · 5-merous fls. in heads or short spikes, with invol.; K usu. repres. by hairs of pappus, C often ·, 2-lipped or strap-shaped, A at base epipet., anthers intr. united, $\bar{G}$ (2) median, 1-loc. with 1 erect ov., and 1 style with 2 stigs.; achene no endosp.

SYSTEM OF BENTHAM AND HOOKER, 1862—93.

I. DICOTYLEDONES (as above).

I. Polypetalae (fl. usually with two whorls of perianth, the inner polyphyllous: exceptions as in Engler's system):

SERIES I. THALAMIFLORAE. Sepals usu. distinct and separate, free from ovary; petals 1-, 2- to ∞ -seriate, hypog.; sta. hypog., rarely inserted on a short or long torus or on a disc; ovary superior.

Order 1. Ranales (sta. rarely definite; cpls. free or immersed in torus, very rarely united; micropyle usu. inferior; embryo minute in fleshy albumen):

1. Ranunculaceae. 2. Dilleniaceae. 3. Calycanthaceae. 4. Magnoliaceae. 5. Anonaceae. 6. Menispermaceae. 7. Berberideae. 8. Nymphaeaceae.

Order 2. Parietales (sta. definite or ∞ ; cpls. united into a 1-loc. ovary with parietal placentae, rarely spuriously 2- or more-loc. by prolongation of placentae):

9. Sarraceniaceae. 10. Papaveraceae. 11. Cruciferae. 12. Caparideae. 13. Resedaceae. 14. Cistineae. 15. Violarieae. 16. Canellaceae. 17. Bixineae.

Order 3. Polygalinae (K and C 5, rarely 4 or 3; sta. as many or twice as many as petals; ovary 2-, rarely 1- or more-loc.; endosperm fleshy, rarely absent; herbs or shrubs with exstip. l.):

18. Pittosporae. 19. Tremandreae. 20. Polygaleae. 21. Vochysiaceae.

Order 4. Caryophyllinae (fl. regular; K 2—5, rarely 6; petals usu. as many; sta. as many or twice as many, rarely more or fewer; ovary 1-loc. or imperfectly 2—5-loc.; placenta free-central, rarely parietal; embryo usu. curved in floury albumen):

22. Frankeniaceae. 23. Caryophylleae. 24. Portulacae. 25. Tamariscineae.

Order 5. Guttiferales (fl. regular; K and C usu. 4—5, imbr.; sta. usu. ∞ ; ovary 3— ∞ -loc., rarely 2-loc. or of 1 cpl.; placentae on inner angles of loculi):

26.* Elatineae. 27. Hypericineae. 28. Guttiferae. 29. Ternstroemiaceae. 30. Dipterocarpeae. 31. Chlaenaceae.

Order 6. Malvales (fl. rarely irregular; K 5, rarely 2—4, free or united, valvate or imbr.; petals as many or 0; sta. usu. ∞ , monadelphous; ovary 3— ∞ -loc., rarely of 1 cpl.; ovules in inner angles of loculi):

32. Malvaceae. 33. Sterculiaceae. 34. Tiliaceae.

SERIES II. DISCIFLORAE. Sepals distinct or united, free or adnate to ovary; disc usu. conspicuous as a ring or cushion, or spread over the base of the calyx-tube, or confluent with the base of the ovary, or broken up into glands; sta. usu. definite, inserted upon or at the outer or inner base of the disc; ovary superior.

Order 7. Geraniales (fls. often irregular; disc usu. annular, adnate to the sta. or reduced to glands, rarely 0; ovary of several cpls., syncarpous or sub-apocarpous; ovules 1—2, rarely ∞ , ascending or pendulous; raphe usu. ventral):

35. Lineae. 36. Humiriaceae. 37. Malpighiaceae. 38. Zygo-phyllaeae. 39. Geraniaceae. 40. Rutaceae. 41. Simarubeae. 42. Ochnaceae. 43. Burseraceae. 44. Meliaceae. 45. Chailletiaeae.

Order 8. Olacales (fl. regular, $\frac{\text{♀}}$ or unisex.; calyx small; disc free, cupular or annular, rarely glandular or 0; ovary entire, 1— ∞ -loc.; ovules 1—3 in each loc., pend.; raphe dorsal, integ. confluent with the nucellus; endosp. usu. copious, fleshy; embryo small; shrubs or trees; leaves alt., simple, exstip.):

46. Olacineae. 47. Ilicineae. 48. Cyrilleae.

Order 9. Celastrales (fl. regular, $\frac{\text{♀}}$; corolla hypo- or peri-gynous; disc tumid, adnate to base of calyx-tube or lining it; sta.=petals or fewer, rarely twice as many, perig. or inserted outside the disc or on its edge; ovary usu. entire; ovules 1—2 in each loc., erect with ventral raphe; leaves simple, except in fam. 52):

49. Celastrineae. 50. Stackhousieae. 51. Rhamneae. 52. Ampelidae.

Order 10. Sapindales (fl. often irregular and unisex.; disc tumid, adnate to base of calyx or lining its tube; sta. perig. or inserted upon the disc or between it and the ovary, usu. definite; ovary entire, lobed or apocarpous; ovules 1—2 in each loc. usu. ascending with a ventral raphe, or reversed, or pend. from a basal funicle, rarely ∞ horizontal; seed usu. exalb.; embryo often curved or crumpled; shrubs or trees, l. usu. compound):

53. Sapindaceae. 54. Sabiaceae. 55. Anacardiaceae.

Anomalous fams. or rather genera:

56. Coriariaeae. 57. Moringeae.

SERIES III. CALYCIFLORAE. Sepals united, rarely free, often adnate to ovary; petals 1-seriate, peri- or epi-gynous; disc adnate to base of calyx, rarely tumid or raised into a torus or gynophore; sta. perig., usu. inserted on or beneath the outer margin of the disc: ovary often inferior.

Order 11. Rosales (fl. usu. $\frac{\text{♀}}$, regular or irregular; cpls. 1 or more, usu. quite free in bud, sometimes variously united afterwards with the calyx-tube or enclosed in the swollen top of the peduncle; styles usu. distinct):

58. Connaraceae. 59. Leguminosae. 60. Rosaceae. 61. Saxi-frageae. 62. Crassulaceae. 63. Droseraceae. 64. Hamamelidae. 65. Bruniaceae. 66. Halorageae.

Order 12. Myrtales (fl. regular or sub-regular, usu. $\frac{\text{♀}}$; ovary syncarpous, usu. inferior; style undivided, or very rarely styles free; placentae axile or apical, rarely basal; l. simple, usu. quite entire, rarely 3-foliolate in fam. 68):

67. Rhizophoraceae. 68. Combretaceae. 69. Myrtaceae. 70. Melastomaceae. 71. Lythraeae. 72. Onagraceae.

Order 13. Passiflorales (fl. usu. regular, ♂ or unisexual; ovary usu. inferior, syncarpous, 1-loc. with parietal placentae, sometimes 3- or more-loc. by the produced placentae; styles free or connate):

73. Samydaceae. 74. Loaseae. 75. Turneraceae. 76. Passifloraeae. 77. Cucurbitaceae. 78. Begoniaceae. 79. Datisceae.

Order 14. Ficoidales (fl. regular or sub-regular; ovary syncarpous, inferior to superior, 1-loc. with parietal, or 2—∞-loc. with axile or basal placentae; embryo curved, with endosp., or cyclical, or oblique with no endosp.):

80. Cactaceae. 81. Ficoideae.

Order 15. Umbellales (fl. regular, usu. ♂; sta. usu. definite; ovary inferior, 1—2—∞-loc.; ovules solitary, pend. in each loc. from its apex; styles free or united at base; seeds with endosp.; embryo usu. minute):

82. Umbelliferae. 83. Araliaceae. 84. Cornaceae.

II. **Gamopetalae** (fl. usu. with two whorls of perianth, the inner gamophyllous; exceptions as in Engler's system):

SERIES I. INFERRAE. Ovary inferior; sta. usu. as many as corolla-lobes.

Order 1. Rubiales (fl. regular or irregular; sta. epipet.; ovary 2—∞-loc., with 1—∞ ovules in each loc.):

85. Caprifoliaceae. 86. Rubiaceae.

Order 2. Asterales (fl. regular or irregular; sta. epipet.; ovary 1-loc., 1-ovuled, sometimes > 1-loc. but with only 1 ovule):

87. Valerianeae. 88. Dipsaceae. 89. Calycereae. 90. Compositae.

Order 3. Campanales (fl. usu. irregular; sta. usu. epig.; ovary 2—6-loc., with usu. ∞ ovules in each loc.):

91. Stylidiaceae. 92. Goodenovieae. 93. Campanulaceae.

SERIES II. HETEROMERAE. Ovary usu. superior; sta. epipet. or free from corolla, opp. or alt. to its segments, or twice as many, or ∞; cpls. > 2.

Order 4. Ericales (fl. usu. regular and hypog.; sta. as many or twice as many as petals; ovary 1—∞-loc. with 1—∞ ovules in each loc.; seeds minute):

94. Ericaceae. 95. Vaccinieae. 96. Monotropeae. 97. Epacrideae. 98. Diapensiaceae. 99. Lennoaceae.

Order 5. Primulales (corolla usu. regular and hypog., sta. usu. = and opp. to corolla-lobes; ovary 1-loc. with free-central or basal placenta and 1—∞ ovules):

100. Plumbagineae. 101. Primulaceae. 102. Myrsineae.

Order 6. Ebenales (corolla usu. hypog.; sta. usu. more than corolla-lobes, or if as many, then opposite to them, except in 103, often ∞; ovary 2—∞-loc.; ovules usu. few; trees or shrubs):

103. Sapotaceae. 104. Ebenaceae. 105. Styryaceae.

SERIES III. BICARPELLATAE. Ovary usu. superior; sta. as many as or fewer than corolla-lobes, alt. to them; cpls. 2, rarely 1 or 3.

Order 7. Gentianales (corolla regular, hypog.; sta. epipet.; l. generally opp.):

106. Oleaceae. 107. Salvadoraceae. 108. Apocynaceae. 109. Asclepiadaceae. 110. Loganiaceae. 111. Gentianaceae.

Order 8. Polemoniales (corolla regular, hypog.; sta. = corolla-lobes, epipet.; ovary 1—5-loc.; l. generally alt.):

112. Polemoniaceae. 113. Hydrophyllaceae. 114. Boraginaceae. 115. Convolvulaceae. 116. Solanaceae.

Order 9. Personales (fl. usu. very irregular; corolla hypog., often 2-lipped; sta. generally fewer than corolla-lobes, usu. 4, didynamous, or 2; ovary 1—2- or rarely 4-loc.; ovules usu. ∞):

117. Scrophularineae. 118. Orobanchaceae. 119. Lentibularieae. 120. Columelliaceae. 121. Gesneraceae. 122. Bignoniaceae. 123. Pedalineae. 124. Acanthaceae.

Order 10. Lamiales (corolla usu. 2-lipped, hypog., rarely regular; sta. as in preceding; ovary 2—4-loc.; ovules solitary in loc., or rarely > 1 in fams. 125 and 127; fruit a drupe or nutlets):

125. Myoporineae. 126. Selagineae. 127. Verbenaceae. 128. Labiatae.

Anomalous Fam.

129. Plantagineae.

III. **Monochlamydeae or Incompletæ** (fl. usu. with one whorl of perianth, commonly sepaloïd, or none):

SERIES I. CURVEMBRYAE. Terrestrial plants with usu. $\frac{3}{4}$ fls.; sta. generally = perianth-segments; ovule usu. solitary; embryo curved in floury endosp.

130. Nyctagineae. 131. Illecebraceae. 132. Amarantaceae. 133. Chenopodiaceae. 134. Phytolaccaceae. 135. Batideae. 136. Polygonaceae.

SERIES II. MULTIOVULATAE AQUATICAE. Aquatic plants with syncarpous ovary and ∞ ovules.

137. Podostemaceae.

SERIES III. MULTIOVULATAE TERRESTRES. Terrestrial plants with syncarpous ovary and ∞ ovules.

138. Nepenthaceae. 139. Cytinaceae. 140. Aristolochieae.

SERIES IV. MICREMBRYAE. Ovary syn- or apo-carpous; ovules usu. solitary; embryo very small, surrounded by endosp.

141. Piperaceae. 142. Chloranthaceae. 143. Myristiceae. 144. Monimiaceae.

SERIES V. DAPHNALES. Ovary usu. of 1 cpl.; ovules solitary or few; perianth perfect, sepaloïd, in 1 or 2 whorls; sta. perig.

145. Laurineae. 146. Proteaceae. 147. Thymelaeaceae. 148. Penaeaceae. 149. Elaeagnaceae.

SERIES VI. ACHLAMYDOSPOREAE. Ovary 1-loc., 1—3-ovuled; ovules not apparent till after fert.; seed with endosp., but no testa, adnate to receptacle or pericarp.

150. Loranthaceae. 151. Santalaceae. 152. Balanophoreae.

SERIES VII. UNISEXUALES. Fls. unisex.; ovary syncarpous or of 1 cpl.; ovules solitary or 2 per cpl.; endosp. or none; perianth sepaloïd or much reduced or absent.

153. Euphorbiaceae. 154. Balanopseae. 155. Urticaceae. 156. Platanaceae. 157. Leitneriaceae. 158. Juglandaceae. 159. Myricaceae. 160. Casuarineae. 161. Cupuliferae.

SERIES VIII. ANOMALOUS FAMILIES. Unisex. fams. of doubtful or unknown affinities.

162. Salicaceae. 163. Lacistemaceae. 164. Empetraceae. 165. Ceratophylleae.

II. MONOCOTYLEDONES (as in Engler).

SERIES I. MICROSPERMAE. Inner perianth petaloid; ovary inferior with 3 parietal or rarely axile placentae; seeds minute, exalb.

169. Hydrocharideae. 170. Burmanniaceae. 171. Orchideae.

SERIES II. EPIGYNAE. Perianth partly petaloid; ovary usu. inferior; endosp. abundant.

172. Scitamineae. 173. Bromeliaceae. 174. Haemodoraceae. 175. Irideae. 176. Amaryllideae. 177. Taccaceae. 178. Dioscoreaceae.

SERIES III. CORONARIEAE. Inner perianth petaloid; ovary usu. free, superior; endosp. abundant.

179. Roxburghiaceae. 180. Liliaceae. 181. Pontederiaceae. 182. Philodraceae. 183. Xyrideae. 184. Mayacaceae. 185. Commelinaceae. 186. Rapateaceae.

SERIES IV. CALYCINAE. Perianth sepaloid, herbaceous or membranous; ovary &c. as in III.

187. Flagellariaceae. 188. Juncaceae. 189. Palmae.

SERIES V. NUDIFLORAE. Perianth none, or represented by hairs or scales; cpl. 1 or several syncarpous; ovary superior; ovules 1— ∞ ; endosp. usu. present.

190. Pandaneae. 191. Cyclanthaceae. 192. Typhaceae. 193. Aroideae. 194. Lemnaceae.

SERIES VI. APOCARPAE. Perianth in 1 or 2 whorls, or none; ovary superior, apocarp.; no endosp.

195. Triurideae. 196. Alismaceae. 197. Naiadaceae.

SERIES VII. GLUMACEAE. Fls. solitary, sessile in the axils of bracts and arranged in heads or spikelets with bracts; perianth of scales, or none; ovary usu. 1-loc., 1-ovuled; endosp.

198. Eriocaulaceae. 199. Centrolepideae. 200. Restiaceae. 201. Cyperaceae. 202. Gramineae.

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